Essential Components

Get the right components, at the right price,
right where you need them.

Power

Logic

Operator
Interface

Connectivity

Safety

Sensors
& Switches

LISTEN.
THINK.
SOLVE.®

Allen-Bradley • Rockwell Software

Rockwell
Automation

Bulletin Index

Bulletin Number	Page
100-C	1-31
100-CR	1-31
100-D	1-39
100-G	1-44
100-K	1-28
100-KR	1-28
100S-C	1-32
100S-D	1-40
103C/107C	1-50
103T/107T	1-48
109-C/105-C	1-51
140A	1-5
140-CMN	1-8
140F	2-46
140M-C/-D/-F	1-8
140M-I/-J/-L	1-10
140M-H/-J/-L/-N	1-12
140M-RC	1-9
140UE	1-18
141A	1-53
1485	4-16
1489	2-43
1492	4-13
1492-FB	2-45
1492-J	4-5
1492-L	4-8
1492-PDE	4-12
1492-RCD	2-37
1492-SP	2-38
150-C	1-78
150-F	1-80
156-B	1-46
1585	4-28
1606-XL	2-53
1609-U/-P/-S	2-56
1732	4-33
1752	5-28
1763	2-30
1766	2-31
1783	4-31
190E/191E	1-48
190S/191S	1-49
193-EC1/2/3/5	1-70
193-ED/-EE	1-66
193-K	1-63
193-T1	1-64
194E	1-110
194E-Y	1-112
194L	1-104
20A	1-94
20B	1-96
20F	1-98
2080	2-27
22A	1-84
22B	1-88
22C	1-92
22D	1-90
22F	1-86
2711C	3-47
280	4-14
280A/281A	1-76
280D/281D	1-76
283A/283D	1-76
284A/284D	1-76
42BT	6-13
42CA	6-10
42CM	6-11
42CS	6-12
42EF	6-7
42G	6-14
42JS	6-9
44B	6-13
45BPD	6-15
45CLR	6-16
45CPD	6-16
45DLA	6-19
45MLA	6-18
45PVA	6-17
45AST	6-17
440E	5-9
440F	5-20
440G	5-7
440J	5-10
440K	5-6
440L	5-14
440N-S	5-5
440N-Z	5-3
440P	5-11
440R	5-22
442L	5-20
445L	5-16
4983-D	2-47
700-CF/-CRF	2-19
700-FE	2-13
700-FS	2-14
700-HA	2-6
700-HC	2-8
700-HK	2-9
700-HL	2-10
700-HP	2-12
700-K	2-17
700-KR	2-17
700-SH	2-22
800B	3-7
800F	3-10
800FC	3-31
800FD	3-14
800FP	3-21
809S	1-75
813S	1-75
814S	1-75
817S	1-75
825-P	1-73
836E	6-36
837E	6-38
839E	6-40
855B	3-41
855BL	3-42
855BM	3-42
855BS	3-42
855E/-D	3-4
855F	3-39
855H	3-40
855P	3-33
855PB	3-33
855PC	3-33
855PD	3-34
855PS	3-34
855T	3-35
855W	3-43
871A	4-42
871TM	6-27
871TS	6-28
871P	6-29
872C	6-25
873P	6-34
875C	6-32
889D	4-36
889N	4-39
889P	4-40
889R	4-38
898D/898P	4-41
900-TC	2-23

Table of Contents

Power 1-1

Motor Protection Circuit Breakers 1-2
Motor Circuit Protectors 1-4
Molded Case Circuit Breakers 1-18
Contactors 1-25
Solid State Contactors 1-46
Open Type Starters 1-48
Enclosed Starters 1-48
Mounting System 1-52
Motor Protection 1-60
ArmorStart™ 1-76
Distributed Motor Controllers 1-76
Soft Starters 1-77
Drives 1-82
Control and Load Switches 1-103

Logic 2-1

Relays and Timers 2-2
Solid State Devices 2-21
Temperature Controllers 2-23
Programmable Controllers 2-24
Circuit Protection 2-34
Surge and Filter Protection 2-47
Power Supplies 2-51

Operator Interface 3-1

Control and Indicating Units 3-2
Graphic Terminals 3-45

Connectivity 4-1

Signal Conditioners 4-2
Terminal Blocks 4-4
Wiring Systems 4-13
ArmorConnect™ Power Media 4-14
DeviceNet™ Media 4-16
Ethernet Media 4-28
Distributed I/O 4-32
Connection Systems 4-35

Safety 5-1

Safety Interlock & Guard Locking Switches 5-2
E-stops and Trip Devices 5-8
Presence Sensing 5-12
Safety Relays and Controllers 5-21
Safety Enabled Actuators 5-29

Sensors 6-1

Photoelectric Sensors 6-2
Inductive Proximity Sensors 6-24
Capacitive Proximity Sensors 6-32
Ultrasonic Sensors 6-33
Condition Sensing Switches 6-35
Limit Swiches 5-11

Essential Components

Within these pages, you will find an extensive selection of your essential Allen-Bradley® component products. Look through this catalogue, call your local Rockwell Automation representative, or visit us online. There are many options to help you choose the products that are fundamental to your success and give you the greatest value.

With Allen-Bradley components, you will find the highest quality at a fair price, an intuitive product selection, quick turnaround time, and fast delivery.

Preferred availability products are identified in the catalogue with bold catalogue numbers and options.

This catalogue highlights our most essential components; for a complete product selection, visit our online catalogues in multiple languages at **www.ab.com/catalogs**.

Broad Selection of Quality Products

- Optimise machine performance with the right product
- Compliant with international standards
- Extensive selection for single-source convenience and supply chain efficiencies
- Quality components designed for your critical applications

Flexible, Hassle-Free Ordering

- Call your local distributor today
- Product Selection Toolbox allows you to select and configure the products you need with confidence
- Visit www.rockwellautomation.com/distributor to find your local Allen-Bradley® distributor(s)

Services & Support

- Responsive, knowledgeable network of local professionals, available globally in more than 80 countries
- Local field service professionals to make installation and integration easy
- Post-sale support to keep operation and maintenance optimal
- Visit www.rockwellautomation.com/support to select your country and find your local support information

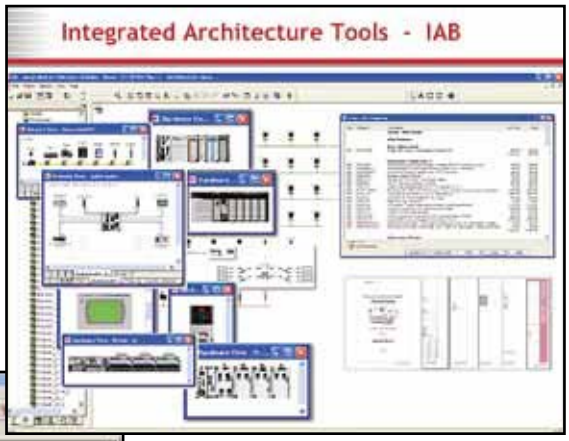
Save Time & Reduce Costs

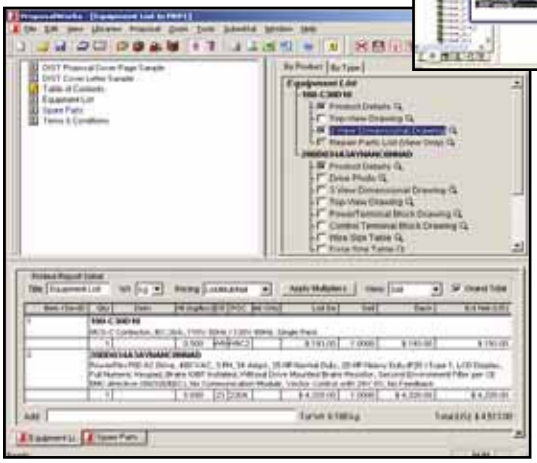
- Increase quality, productivity, and flexibility while reducing costs
- Competitive prices and local service and support keep your project within budget and on schedule

Essential Components

Product Selection Toolbox

The Rockwell Automation Product Selection Toolbox (PST) offers a complete suite of user tools for product selection and configuration across product lines from project conception through final design. From push buttons to drives to motor control centers and fully networked control systems, you'll find the product information and configuration assistance you need to help you and your customers succeed with Rockwell Automation.





Product Selection & System Design Tools

Integrated Architecture Builder™
Automation System Configurator

- Quickly develop a Logix/NetLinx control system configuration, including network media and On-Machine cabling with a BOM and report
- Ability to include Micrologix™ controllers, PowerFlex drives, ArmorStart motor controllers and other components, as well as Logix controllers and I/O
- Add SERCOS and EtherNet/IP motion control configurations using a link to Motion Analyzer
- Check network configurations using built-in rules and capacity calculations
- Configure Stratix switches and physical media with enhanced graphical views
- Export Integrated Architecture Builder output to ProposalWorks, RSLogix Architect, PowerPoint and VISIO

ProposalWorks™ Create Proposals and Submittals

- Provides access to information on a broad range of Allen-Bradley products and services
- Simple product selection interface helps you easily determine the exact catalogue numbers
- Access to current, local list pricing, and a comprehensive supplemental product information list
- Available features such as product selection wizards, agreement pricing, a spare parts generator, and the ability to separate part numbers to view what Rockwell Automation components comprise them

Using ProposalWorks can help you select the correct product based on your requirements and give your customers the information they need fast and anywhere in the world

MCS Star™ Design MCS Bus Systems

- Helps you configure Motor Control System starters for rated motor voltages from 230…690V
- Provides the correct catalog number, wiring diagram, and layout drawing for starters of your choice
- Provides assistance in selecting and dimensioning all of required busbar rack components

CrossWorks™

- Assists in crossing competitive part numbers as well as obsolete Rockwell Automation part numbers to an equivalent Rockwell Automation part number.
- Gives you the ability to submit crosses directly to the Product Support Team and they will provide a cross reference back to you. You can also go to ab.com/e-tools and look up existing cross references in the database.

Current™ Program Updater

- Allows you to have the most up-to-date applications, product, price, and supplementary information
- All programs are updated for the first Thursday of every month

Current Program Updater is automatically installed with the Product Selection Toolbox to ensure that your software provides the most up-to-date features and information

eCADWorks™ CAD Drawings Source

- Allows you to select product 3D CAD drawings in AutoCAD
- Provides you with access to thousands of drawings for a wide range of Allen-Bradley products, as well as assistance configuring catalogue numbers

CenterONE™ Design Low Voltage MCCs

RailBuilder™ Design DIN Mountable Systems

MotionAnalyzer Design Motion Control Systems

More information you find under www.ab.com/e-tools

For questions or specific information please contact the Product Support Team: PST_Support@ra.rockwell.com

How to access product selection toolbox?

- Gain instant access online at www.ab.com/pst , or
- order your personal Product Selection Toolbox DVD, which contains the complete set of tools, from your local Rockwell Automation representative today.

Essential Components

ePLAN®

Rockwell Automation loaded more than 15'000 articles of its product portfolio into the **EPLAN** data portal and will continue to add many more products in the coming months.

This recent add-on enables EPLAN users to select Rockwell Automation products within the design of high quality electrical projects and machinery.

What is EPLAN?

EPLAN is a data-based software solution for electrical control design. Time saving and improvement in quality and standards are easily attained due to EPLAN's object-oriented philosophy meaning changes are easy to implement. All necessary reports such as bill of materials, cable, wire and terminal lists are generated at the push of a button, offering considerable time saving.

Your Benefits

EPLAN helps customers also to:

- Increase the quality of the engineering process by offering advanced project documentation and simple replication of process steps.
- Reduce costs due to time savings based on improved efficiency. For example, existing projects can be used as base for future products or changes can easily be implemented.
- Reduced 'time-to-market'. Common project steps can be customised into building blocks and stored in the data base.
- Keep the control system and the electrical drawings updated with the latest information thanks to a bi-directional link between EPLAN and Rockwell Automation design tools such as RSLogix Architect and RSLogix 5000.

How to get access?

Current EPLAN user can gain access immediately; just select the Rockwell Automation products, available on the EPLAN data portal and start implementing them into your design projects.

If you are not yet an EPLAN user and you want to know more about the EPLAN capabilities, please check out EPLAN on **www.eplan.de** [or corresponding EPLAN web page in your home country]. Alternatively, check on **www.rockwellautomtion.com/en/e-tools/drawings.html**. Rockwell Automation has placed its product macros there.

Power

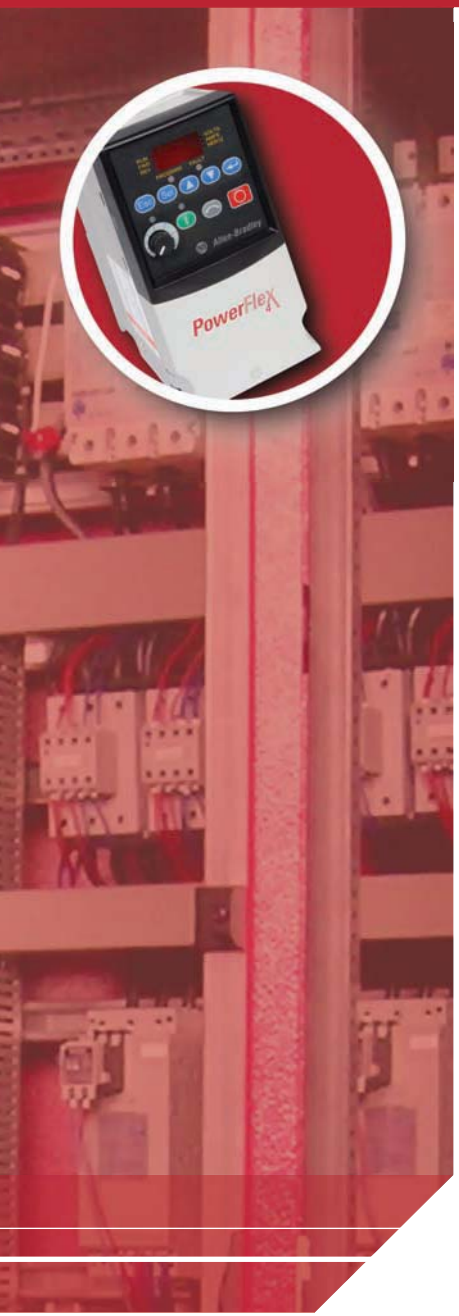


TABLE OF CONTENTS

Motor Protection Circuit Breakers Motor Circuit Protectors	1-2
Molded Case Circuit Breakers	1-18
Contactors	1-25
Solid State Contactors	1-46
Open Type Starters Enclosed Starters	1-48
Mounting System	1-52
Motor Protection	1-60
ArmorStart Distributed Motor Controllers	1-76
Soft Starters	1-77
Drives	1-82
Control and Load Switches	1-103

Motor Protection Circuit Breakers

Bulletin	**140F, MSC Fuse Holder**	**140A, Manual Motor Starter**	**140M-C2**	**140M-D8**	**140M-F8**
Rated Current, max. I_e	32 A	16 A	32 A	32 A	45 A
Current Rating	1…16 A	0.1…16 A	0.1…32 A	1.6…32 A	6.3…45 A
Short Circuit Protection	Depends on fuse	✓	✓	✓	✓
Overload Protection	—	✓	✓	✓	✓
Trip Class	—	10	10	10	10
Standards Compliance:					
CSA 22.2, No. 14	✓	✓	✓	✓	✓
UL 508 Manual, Self Protected (Type E)	✓	✓	✓	✓	✓
UL 508 (Group Install.)	✓	✓	✓	✓	✓
UL 508 (Overload Protection)	✓	✓	✓	✓	✓
IEC 60947-1, -2	✓	✓	✓	✓	✓
IEC 60947-4-1	✓	✓	✓	✓	✓
CE	✓	✓	✓	✓	✓
ATEX	—	—	✓ (up to 25 A)	✓ (up to 25 A)	—
CCC	—	—	✓ (up to 25 A)	✓ (up to 25 A)	✓
Accessories					
Ext. Rotary Operator	—	—	✓	✓	✓
Flex Cable Operator	—	—	—	—	—
Auxiliary Contacts	✓	✓	✓	✓	✓
Trip Indication Contacts	Trip indication light	✓	✓	✓	✓
Product Selection	**See page 2-46**	**See page 1-5**	**See page 1-8**		

Motor Protection Circuit Breakers

Bulletin	140-CMN	140M-I	140M-J	140M-L
Rated Current, max. I_e	90 A	205 A	250 A	630 A
Current Rating	16…90 A	40…205 A	20…250 A	40…630 A
Short Circuit Protection	✓	✓	✓	✓
Overload Protection	✓	✓	✓	✓
Trip Class	10	5…20	10…30	10…30
Standards Compliance:				
CSA 22.2, No. 14	✓	✓	✓	✓
UL 508 Manual, Self Protected (Type E)	—	—	—	—
UL 508 (Group Install.)	✓	—	—	—
UL 508 (Overload Protection)	✓	✓	✓	✓
UL 489	—	✓	✓	✓
IEC 60947-2	✓	✓	✓	✓
IEC 60947-4	✓	✓	✓	✓
CE	✓	✓	✓	✓
Accessories				
Ext. Rotary Operator	✓	✓	✓	✓
Flex Cable Operator	—	✓	✓	✓
Auxiliary Contacts	✓	✓	✓	✓
Trip Indication Contacts	✓	✓	✓	✓
Product Selection	**See page 1-8**	**See page 1-10**		

Bulletin 140M

Motor Circuit Protectors

Product Line Overview

Motor Circuit Breakers

- Current range 0.16…1200 A
- UL Listed/Recognized for motor loads
  - Short-circuit protection (magnetic trip only)
  - Overload protection must be provided separately
- Visible trip indication
- High current limiting
- High switching capacity

	C-Frame	D-Frame	F-Frame	H-Frame	J-Frame	L-Frame	N-Frame
Max. Current I_e	2.5 A	32 A	45 A	100 A	250 A	600 A	1200 A
Current Rating	0.16…2.5 A	2.5…32 A	25…45 A	3…100 A	70…250 A	125…600 A	640…1200 A
Short Circuit Protection	✓	✓	✓	✓	✓	✓	✓
Standards Compliance:							
CSA 22.2, No. 14	✓	✓	✓				
CSA 22.2, No. 5	—	—	—	✓	✓	✓	✓
UL 508 (Group Install.)	✓	✓	✓				
UL489 (Recognized)	—	—	—	✓	✓	✓	✓
IEC 60947-2	✓	✓	✓	✓	✓	✓	✓
CE	✓	✓	✓	✓	✓	✓	✓
CCC	—	✓ (up to 25 A)	✓	—	—	—	—
Accessories							
Ext. Rotary Operator	✓	✓	✓	✓	✓	✓	✓
Flex Cable Operator	—	—	—	✓	✓	✓	✓
Auxiliary Contacts	✓	✓	✓	✓	✓	✓	✓
Trip Indication Contacts	✓	✓	✓	✓	✓	✓	✓
Product Selection	**See page 1-11**			**See page 1-12**			

Manual Motor Starters 140A

- Current Range 0.1…16 A
- Motor Protection
- For Economical Motor Starters
- Usable as Main Switch
- Temperature Compensated

3-Pole Manual Motor Starters

Rated Operational Current (I_e)	Motor Current Adjustment Range	Switching of 3-Phase AC Motors AC-2, AC-3 @ 400/415V (50 Hz) ★		
[A]	[A]	[kW]	$I_{cu} = I_{cs}$ [kA]	Cat. No.
0.16	0.1…0.16	0.02	65	140A-C2A-A16
0.25	0.16…0.25	0.06	65	140A-C2A-A25
0.4	0.25…0.4	0.09	65	**140A-C2A-A40**
0.63	0.4…0.63	0.12/0.18	65	**140A-C2A-A63**
1	0.63…1.0	0.25	65	**140A-C2A-B10**
1.6	1.0…1.6	0.37/0.55	65	**140A-C2A-B16**
2.5	1.6…2.5	0.75	50	**140A-C2A-B25**
4	2.5…4.0	1.1/1.5	10	**140A-C2A-B40**
6.3	4.0…6.3	2.2	10	**140A-C2A-B63**
10	6.3…10	3.0/4.0	8	**140A-C2A-C10**
16	10…16	5.5/7.5	6	**140A-C2A-C16**

★ Power ratings: Preferred values according to IEC 60072-1

Accessories 140A

	Description	Term. No.	N.O.	N.C.	For Use With	Cat. No.
	Auxiliary Contact for Flush Mounting 1-pole No additional space required	13-14	1	0	140A	**140A-C-AEA10**
		33-34	1	0		140A-C-AEA210
		11-12	0	1		**140A-C-AEA01**
		31-32	0	1		140A-C-AEA201
	Auxiliary Contact for Left-side Mounting 2-pole Adds 9 mm to the width of the Manual Motor Starter Use compact bus bars with 54 mm spacing	13-14 23-24	2	0	140A	**140A-C-ASA20**
		13-14 21-22	1	1		**140A-C-ASA11**
		11-12 21-22	0	2		140A-C-ASA02

See Publication A117 for complete product information.

Accessories 140A

	Description		For Use With	Cat. No.
	Undervoltage Trip Release For right-side mounting Adds 18 mm to the width of the Manual Motor Starter	24V 50 Hz	140A	140A-C-UXK
		220…230V 50 Hz		**140A-C-UXF**
		400V 50 Hz / 460V 60 Hz		**140A-C-UXN**
		415V 50 Hz / 480V 60 Hz		140A-C-UXB
		110V 50 Hz / 120V 60 Hz		140A-C-UXD
		110V 50 / 60 Hz		140A-C-UXKD
	Shunt Trip Release For right-side mounting Adds 18 mm to the width of the Manual Motor Starter	24V 50 Hz	140A	140A-C-SXK
		220…230V 50 Hz		140A-C-SXF
		400V 50 Hz / 460V 60 Hz		140A-C-SXN
		415V 50 Hz / 480V 60 Hz		140A-C-SXB
		110V 50 Hz / 120V 60 Hz		140A-C-SXD
		110V 50 / 60 Hz		140A-C-SXKD
	Compact Bus Bars 45 mm spacing for manual motor starters with flush-mounted auxiliary contact blocks	2 x 3 Terminal links	140A	140A-C-W452
		3 x 3 Terminal links		140A-C-W453
		4 x 3 Terminal links		**140A-C-W454**
		5 x 3 Terminal links		140A-C-W455
	Compact Bus Bars 54 mm spacing for manual motor starters with side-mounted auxiliary contact blocks	2 x 3 Terminal links	140A	**140A-C-W542**
		3 x 3 Terminal links		140A-C-W543
		4 x 3 Terminal links		140A-C-W544
		5 x 3 Terminal links		**140A-C-W545**
	Bus Bar Feeder Terminal Supply of compact busbars Increases wiring capacity		140A-C-W	**140A-C-WT**
	Blank Space Cover For covering unused terminal links		140A-C-W	140A-C-WS
	Connecting Module Contactor and Manual Motor Starter **MUST BE** mounted separately on (2) DIN Rails Electrical interconnection between 140A and 100-C09…-C23 contactor (with AC coils)		140A	**140A-C-PNC23**

See Publication A117 for complete product information.

Accessories 140A

	Description			For Use With	Cat. No.
	Enclosures for Surface Mounting With centre marks for two indicator lights Includes protective earth and neutral wire terminals	Protection Class: IP41		140A	**140A-C-EA41**
		Protection Class: IP55 (with seal and protective membrane)		140A	**140A-C-EA55**
	Enclosures for Flush Mounting Includes protective earth and neutral wire terminals	Protection Class: IP41		140A	**140A-C-EE41**
		Protection Class: IP55 (with seal and protective membrane)		140A	**140A-C-EE55**
	Emergency-Stop Push Button Set For use with enclosures Twist to release			140A-C-E…	**140A-C-MT**
	Emergency-Stop Push Button Set For use with enclosures Key release			140A-C-E…	140A-C-MK
	Button Membrane For IP55 enclosures Replacement part with four screws (mounting frame included)			140A-C-EA55 140A-C-EE55	140A-C-N55
	Pilot Lights Length of connection leads 180 mm, includes lamp, protection class IP54.	Green	120V	198E-A…, 198E-C…, 140A-C-E…	140-LG120
			240V		140-LG240
			400V		140-LG400
		Red	120V	198E-A…, 198E-C…, 140A-C-E…	140-LR120
			240V		**140-LR240**
			400V		140-LR400
		White	120V	198E-A…, 198E-C…, 140A-C-E…	140-LW120
			240V		140-LW240
			400V		140-LW400
	Locking Arrangement Suitable for enclosures 140A-C-E… For 1…3 padlocks with ø 4…8 mm			140A-C-E…	140A-C-M3E
	Locking Arrangement For locking ON-button of the Manual Motor Starter For 1…3 padlocks with ø 4…6 mm			140A	140A-C-M3
	Screw Adapter Hat (DIN) Rail 35 x 7.5 mm, length 44 mm			140A	140A-C-N12

See Publication A117 for complete product information.

Bulletin 140M

Motor Protection Circuit Breakers

Product Selection

Motor Protection Circuit Breakers 140M, 140-CMN

- Short Circuit Protection — Standard Magnetic Trip (13…14 x I_e)
- Short Circuit Protection — High Magnetic Trip (16…21 x I_e)
- Motor Overload Protection — Trip Class 10
- Ambient Temperature Compensation
- Phase-loss Protection

Rated Operational Current (I_e)	Motor Current Adjustment Range	Switching of 3-Phase AC Motors AC-2, AC-3 @ 400/415V (50 Hz)				Standard Magnetic Trip	High Magnetic Trip
[A]	[A]	[kW]	I_{cu} [kA]	I_{cs} [kA]		Cat. No.	Cat. No.
C-Frame							
0.16	0.10…0.16	0.02	100	100	★	**140M-C2E-A16**	**140M-C2T-A16**
0.25	0.16…0.25	0.04	100	100	★	**140M-C2E-A25**	**140M-C2T-A25**
0.4	0.25…0.40	0.09	100	100	★	**140M-C2E-A40**	**140M-C2T-A40**
0.63	0.40…0.63	0.18	100	100	★	**140M-C2E-A63**	**140M-C2T-A63**
1	0.63…1.0	0.25	100	100	★	**140M-C2E-B10**	**140M-C2T-B10**
1.6	1.0…1.6	0.55	100	100	★	**140M-C2E-B16**	**140M-C2T-B16**
2.5	1.6…2.5	0.75	100	100	★	**140M-C2E-B25**	**140M-C2T-B25**
4	2.5…4.0	1.5	100	100	★	**140M-C2E-B40**	**140M-C2T-B40**
6.3	4.0…6.3	2.2	100	100	★	**140M-C2E-B63**	**140M-C2T-B63**
10	6.3…10	4	100	100	★	**140M-C2E-C10**	**140M-C2T-C10**
16	10…16	7.5	65 (50) ‡	50	★	**140M-C2E-C16**	**140M-C2T-C16**
20	14.5…20	10	50	15	★	**140M-C2E-C20**	—
25	18…25	11	15	15	★	**140M-C2E-C25**	—
29	24…29	13	15	15	★	**140M-C2E-C29**	—
32	27…32	15	15	15	★	**140M-C2E-C32**	—
D-Frame							
2.5	1.6…2.5	0.75	100	100		**140M-D8E-B25**	—
4	2.5…4.0	1.5	100	100		**140M-D8E-B40**	—
6.3	4.0…6.3	2.2	100	100		**140M-D8E-B63**	—
10	6.3…10	4	100	100		**140M-D8E-C10**	—
16	10…16	7.5	100 (65) ‡	50 (25) ‡		**140M-D8E-C16**	**140M-D8T-C16**
20	14.5…20	10	100	25		**140M-D8E-C20**	**140M-D8T-C20**
25	18…25	11	65	25		**140M-D8E-C25**	—
29	24…29	13	50	25	★	**140M-D8E-C29**	—
32	27…32	15	50	15	★	**140M-D8E-C32**	—
F-Frame							
10	6.3…10	4	100	50		**140M-F8E-C10**	—
16	10…16	7.5	100	50		**140M-F8E-C16**	—
20	14.5…20	10	100	50		**140M-F8E-C20**	—
25	18…25	11	100	50		**140M-F8E-C25**	**140M-F8T-C25**
32	23…32	15	65	50		**140M-F8E-C32**	**140M-F8T-C32**
45	32…45	22	65	50		**140M-F8E-C45**	—
CMN-Frame							
25	16…25	13	65	65		**140-CMN-2500**	—
40	25…40	22	65	50		**140-CMN-4000**	140-CMT-4000
63	40…63	32	65	50		**140-CMN-6300**	140-CMT-6300
90	63…90	45	50	25		**140-CMN-9000**	—

★ May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. (Example: **140M-C2E-A16M**).
‡ ( ) for High Magnetic Trip

Motor Protection Circuit Breakers 140M — Spring Clamp Terminals

- Short Circuit Protection — Standard Magnetic Trip (Fixed at 13 x I_e)
- Overload Protection — Trip Class 10 (Adjustable Current Range)
- Ambient temperature compensation
- Phase-loss protection
- ATEX for C-Frame
- Standards and Approvals: IEC, cULus

Rated Operational Current (I_e)	Motor Current Adjustment Range	Switching of 3-Phase AC Motors AC-2, AC-3 @ 400/415V (50 Hz)			
[A]	[A]	[kW]	I_{cu} [kA]	I_{cs} [kA]	Cat. No.
C-Frame					
0.16	0.10…0.16	0.02	100	100	140M-RC2E-A16
0.25	0.16…0.25	0.04	100	100	140M-RC2E-A25
0.4	0.25…0.40	0.09	100	100	140M-RC2E-A40
0.63	0.40…0.63	0.18	100	100	140M-RC2E-A63
1	0.63…1.0	0.25	100	100	140M-RC2E-B10
1.6	1.0…1.6	0.55	100	100	140M-RC2E-B16
2.5	1.6…2.5	0.75	100	100	140M-RC2E-B25
4	2.5…4.0	1.5	100	100	140M-RC2E-B40
6.3	4.0…6.3	2.2	100	100	140M-RC2E-B63
10	6.3…10	4.0	100	100	140M-RC2E-C10
16	10…16	7.5	65	50	140M-RC2E-C16

Motor Protection Circuit Breakers 140M-I, -J, -L

- Short Circuit Protection — Standard Magnetic Trip (Fixed at 12...15 x I_e)
- Overload Protection — Trip Class: 140M-I, 5…20 / 140M-J, -L, 10…30 (Adjustable)

Cat. No. 140M-I

Cat. No. 140M-J

Cat. No. 140M-L

Rated Operational Current (I_e)	Motor Current Adjustment Range	Ultimate Interrupting Current [kA] (I_{cm})			
[A]	[A]	400V	525V		Cat. No.
		I-Frame			
80	40…80	70	30	★	**140M-I8E-C80E**
100	80…100	70	30	★	**140M-I8E-D10E**
160	100…160	70	30	★	**140M-I8E-D16E**
205	160…205	70	30	★	140M-I8E-D20E
		J-Frame			
50	20…50	25	18		140M-J2E-C50
100	40…100	25	18		140M-J2E-D10
160	64…160	25	18		**140M-J2E-D16**
250	100…250	25	18		**140M-J2E-D25**
50	20…50	70	25		140M-J8E-C50
100	40…100	70	25		140M-J8E-D10
160	64…160	70	25		**140M-J8E-D16**
250	100…250	70	25		140M-J8E-D25
		L-Frame			
250	100…250	40	18		140M-L2E-D25
400	160…400	40	18		140M-L2E-D40
630	250…630	40	18		140M-L2E-D63
250	100…250	70	25		140M-L8E-D25
400	160…400	70	25		**140M-L8E-D40**
630	250…630	70	25		140M-L8E-D63

★ IEC approvals and CE marking only

Accessories for 140M-I, -J, -L see page 1-23, catalogue A117 or on-line catalogue at www.ab.com/catalogs

Circuit Breakers 140M, Short-Circuit Protection for Starters

- Short circuit protection — standard magnetic trip (13…14 x I_e)
- Short circuit protection for 3 component starters — No motor overload protection
  - separate Bulletin 193-E or 193-T product required for overload and installation protection
- For Trip Class 10 motor applications

Rated Operational Current (I_e)	Switching of 3-Phase AC Motors AC-2, AC-3 @ 400/415V (50 Hz)				
[A]	[kW]	I_{cu} [kA]	I_{cs} [kA]		Cat. No.
C-Frame					
0.16	0.02	100	100	★	140M-C2N-A16
0.25	0.04	100	100	★	140M-C2N-A25
0.4	0.09	100	100	★	140M-C2N-A40
0.63	0.18	100	100	★	**140M-C2N-A63**
1	0.25	100	100	★	**140M-C2N-B10**
1.6	0.55	100	100	★	**140M-C2N-B16**
2.5	0.75	100	100	★	**140M-C2N-B25**
D-Frame					
2.5	0.75	100	100		**140M-D8N-B25**
4	1.5	100	100		**140M-D8N-B40**
6.3	2.2	100	100		**140M-D8N-B63**
10	4	100	100		**140M-D8N-C10**
16	7.5	100	50		**140M-D8N-C16**
25	11	65	25		**140M-D8N-C25**
32	15	50	25		**140M-D8N-C32**
F-Frame					
25	11	100	50		**140M-F8N-C25**
32	15	65	50		**140M-F8N-C32**
45	22	65	50		**140M-F8N-C45**

★ May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. (Example: **140M-C2N-A16M**).
Accessories see page 1-13

Note: In applications with 140M-C_N, 140M-D_N and 140M-F_N as the short circuit protection device of heavy duty starting motors, the rated operational current I_e of the above devices must be over-dimensioned with following factors:

CLASS 10 = 1.00
CLASS 15 = 1.22
CLASS 20 = 1.42
CLASS 25 = 1.58
CLASS 30 = 1.73

Motor Circuit Protectors (MCP)

- Short Circuit Protection — Magnetic Trip (Adjustable at 3...10 x I_e)
- Overload Protection — None (Magnetic Trip Only)

Cat. No. 140M-H

Cat. No. 140M-J

Cat. No. 140M-L

Rated Operational Current (I_e)	Magnetic Trip Current	Switching of 3-Phase AC Motors AC-2, AC-3 @ 400/415V (50 Hz)		
[A]	[A]	[kW]	I_{cu} [kA] ★	Cat. No.
		H-Frame		
3	9…33	0.75	(65)	140M-H8P-B30
7	21…77	2.2	(65)	140M-H8P-B70
15	45…165	5.5	(65)	140M-H8P-C15
30	90…330	11	(65)	140M-H8P-C30
50	150…550	22	(65)	**140M-H8P-C50**
70	210…770	30	(65)	**140M-H8P-C70**
100	300…1100	45	(65)	**140M-H8P-D10**
100	500…1500	55	(65)	140M-H8R-D10
		J-Frame		
100	500…1000	37	(65)	140M-J8P-D10
125	625…1250	45	(65)	**140M-J8P-D12**
150	750…1500	55	(65)	**140M-J8P-D15**
175	875…1750	55	(65)	140M-J8P-D17
200	1000…2000	75	(65)	140M-J8P-D20
225	1125…2250	90	(65)	140M-J8P-D22
250	1250…2500	90	(65)	**140M-J8P-D25**
		L-Frame		
225	1125…2250	90	(65)	140M-L8P-D22
250	1250…2500	90	(65)	140M-L8P-D25
300	1500…3000	110	(65)	140M-L8P-D30
350	1750…3500	132	(65)	140M-L8P-D35
400	2000…4000	160	(65)	140M-L8P-D40
450	2250…4500	160	(65)	140M-L8P-D45
500	2500…5000	200	(65)	140M-L8P-D50
600	3000…6000	250	(65)	140M-L8P-D60
		N-Frame		
800	1600…6400	250	(65)	140M-N8P-D80
1200	2400…9600	400	(65)	140M-N8P-E12

★ Tested @ 480V 60 Hz according UL 489

Accessories for 140M-H, -J, -L, N see page 1-23

Accessories 140M, 140-CMN

	Description	Term. No.	N.O.	N.C.	For Use With		Cat. No.
Screw Terminals							
	Front-Mounted Auxiliary Contact • 1-pole or 2-pole • No additional space required • Only 1 per device	13-14	1	0	140M-C, D, F; 140U-D (UL489 only in combination with 140M-C-AFC)	★	**140M-C-AFA10**
		11-12	0	1			**140M-C-AFA01**
		13-14, 21-22	1	1		★	**140M-C-AFA11**
		13-14, 23-24	2	0			**140M-C-AFA20**
		11-12, 21-22	0	2			**140M-C-AFA02**
	Right Side-Mounted Auxiliary Contact • 2-pole • Adds 9 mm to the width of the device • Two per MPCB	33-34, 43-44	2	0	140M-C, D, F		**140M-C-ASA20**
		31-32, 41-42	0	2			**140M-C-ASA02**
		33-34, 41-42	1	1		★	**140M-C-ASA11**
	Front-Mounted Trip Contact • 2-pole • Indicates tripping of device • No additional space required	13-14, 27-28	2	0	140M-C, D, F; 140U-D (UL489 only in combination with 140M-C-AFC)		**140M-C-AFAR10A10**
		11-12, 27-28	1	1			**140M-C-AFAR10A01**
	Right-Side Mounted Trip Contact • 2-pole • Indicates tripping of motor protection circuit breaker • Adds 9 mm to the width of the circuit breaker • One only per MPCB • A right-side mounted auxiliary contact may be tandem mounted on top of this trip contact	57-58, 67-68	2	0	140M-C, D, F		**140M-C-ASAR10M10**
		57-58, 65-66	1	1			**140M-C-ASAR10M01**
		55-56, 67-68	1	1			**140M-C-ASAR01M10**
		55-56, 65-66	0	2			**140M-C-ASAR01M01**
		77-78, 65-66	1	1			**140M-C-ASAM11**
Spring Clamp Terminals							
	Front-Mounted Auxiliary Contact 1-pole or 2-pole No additional space required - Only 1 per MPCB	13-14	1	0	140M-C, D, F; 140M-RC		140M-RC-AFA10
		11-12	0	1			140M-RC-AFA01
	Front-Mounted Auxiliary Contact 1-pole or 2-pole No additional space required	13-14, 21-22	1	1	140M-C, D, F; 140M-RC		140M-RC-AFA11
		13-14, 23-24	2	0			140M-RC-AFA20
	Front-Mounted Trip Contact 2-pole Indicates tripping of device No additional space required	13-14, 27-28	2	0	140M-C, D, F; 140M-RC		140M-RC-AFAR10A10
		11-12, 27-28	1	1			140M-RC-AFAR10A01

★ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. (Example: **140M-C-AFA10M**).

Bulletin 140M

Motor Protection Circuit Breakers

Accessories

Accessories 140M, 140-CMN

	Description	Term. No.	N.O.	N.C.	For Use With	Cat. No.
	Front-Mounted Auxiliary Contact • Internal • 2-pole • 1 per MPCB	13-14, 23-24	2	0	140-CMN	**140-CA20**
		11-12, 21-22	0	2	140-CMN	140-CA02
		13-14, 21-22	1	1	140-CMN	**140-CA11**
	Front-Mounted Trip-Indicating Auxiliary Contact • Internal • 2-pole • 1 per MPCB	37-38, 43-44	2	0	140-CMN	**140-CT10-10**
		35-36, 41-42	0	2	140-CMN	140-CT01-01
		35-36, 43-44	1	1	140-CMN	**140-CT01-10**
		37-38, 41-42	1	1	140-CMN	140-CT10-01

	Description	Trip Rating	For Use With	Cat. No.
	Undervoltage Trip • Left-side mounted • Adds 18 mm to the width of the circuit breaker • Automatically trips MPCB/MCP when voltage falls below 35…70%	24V, 50 Hz	140M-C, D, F; 140U-D (trip unit series letter B and later)	140M-C-UXK
		110V, 50 Hz		140M-C-UXC
		220…230V, 50 Hz		**140M-C-UXF**
		380…400V, 50 Hz		**140M-C-UXN**
		480V, 60 Hz/415V, 50 Hz		140M-C-UXB
	Undervoltage Trip • Left-side mounted • 2 early make contacts integrated • Adds 18 mm to the width of the circuit breaker • Automatically trips MPCB/MCP when voltage falls below 35…70%	24V, 50 Hz	140M-C, D, F; 140U-D (trip unit series letter B and later)	140M-C-UCK
		110V, 50 Hz		140M-C-UCC
		220…230V, 50 Hz		140M-C-UCF
		380…400V, 50 Hz		140M-C-UCN
		480V, 60 Hz/415V, 50 Hz		140M-C-UCB
	Shunt Trip • Left-side mounted • Adds 18 mm to the width of the circuit breaker • Trips motor protector when voltage is removed	24V, 50 Hz	140M-C, D, F; 140U-D	140M-C-SNK
		110V, 50 Hz		140M-C-SNC
		220…230V, 50 Hz		**140M-C-SNF**
		380…400V, 50 Hz		140M-C-SNN
		480V, 60 Hz/415V, 50 Hz		140M-C-SNB
	Undervoltage Trip Unit • Internal, front-mounted • Integrated short-circuit trip indication • Automatically trips MPCB when voltage falls below 35…70%	24V, 50/60 Hz	140-CMN	140-CUV-KJ
		110V, 50 Hz/120V, 60 Hz		140-CUV-D
		220V, 50 Hz/240V, 60 Hz		140-CUV-A
	Shunt Trip Unit • Internal, front-mounted • Integrated short-circuit trip indication • Provides remote tripping of the MPCB	24V, 50/60 Hz	140-CMN	140-CRT-KJ
		110V, 50 Hz/120V, 60 Hz		140-CRT-D
		220V, 50 Hz/240V, 60 Hz		140-CRT-A
	Communication Module DeviceNet Starter Auxiliary DSA I/O for Distributed Starters. For complete product information, see catalog A117 or on-line catalog at www.ab.com			

Accessories 140M, 140-CMN

	Description		For Use With	Cat. No.
	Anti-Tamper Shield Provides protection against inadvertent adjustment of the current setting	10 pcs/ pkg	140M-C, D, F	140M-C-CA
	Lockable Twist Knob • For one padlock 5 mm (3/16 in.) Ø shackle • Can be locked in OFF position	Black	140M-C, D, F; 140U-D	**140M-C-KN1**
		Red/ Yellow		**140M-C-KRY1**
	Locking Tag • Padlock attachment to the lockable handles • Up to three padlocks 4…8 mm (5/16 in.) Ø shackle		140M-C-KN1, 140M-C-KRY1	140M-C-M3
	Padlockable Operating Knob • Accepts 8 mm (5/16 in.) Ø padlock shackle — up to three padlocks • Permits padlocking in the off position	Black	140-CMN	140-KN
		Red/ Yellow		140-KRY
	Door Coupling Handle • For 3 padlocks 4…8 mm (5/16 in.) in diameter • IP66 Protection/Type 1, 4, 4X, 12 • Interlock override capability • Can be modified for locking in ON position • Ships with coupling — order extension shaft and legend plate separately • Mounting depth (front of DIN Rail to front of enclosure door): - 140M-C: 105.5 mm ± 5 mm (4.15 in. ± 3/16 in.) - 140M-D: 114.5 mm ± 5 mm (4.5 in. ± 3/16 in.) - 140M-F: 137.1 mm ± 5 mm (5.4 in. ± 3/16 in.) - 140-CMN: 169 mm +/- 5 mm (6.7 in. +/- 3/16 in.)	Black	140M-C, D, F; 140U-D	**140M-C-DN66**
			140-CMN	**140-CDN66**
		Red/ Yellow	140M-C, D, F; 140U-D	**140M-C-DRY66**
			140-CMN	**140-CDRY66**
	Legend Plate • Marking: "Hauptschalter" and "Main Switch" • Marking: "Not-Aus" and "Emergency Off"		140-CDN66	**140M-C-DFCN**
			140-CDRY66	140M-C-DFCRY
	Extension Shaft Cut to required length for mounting depth (front of DIN Rail to front of enclosure door): - 140M-C: 117…338 mm (4.6….13.3 in.) - 140M-D: 126…347 mm (5.0….13.7 in.) - 140M-F: 149…369 mm (5.9….14.5 in.) - 140-CMN: 180…403 mm (7.1….15.9 in.)		140M-C-DN66, 140M-C-DRY66, 140-CDN66, 140-CDRY66	**140M-C-DS**
	Extension Shaft (Extended Length) Cut to required length for mounting depth (front of DIN Rail to front of enclosure door): - 140M-C: 117…488 mm (4.6…19.2 in.) - 140M-D: 126…497 mm (5.0…19.6 in.) - 140M-F: 149…519 mm (5.9…20.4 in.) - 140-CMN: 180…553 mm (7.1…21.8 in.)			140M-C-DSL
	Coupler Included with Cat. Nos. 140M-C-DN66 and 140M-C-DRY66		140M-C, D, F; 140U-D	140M-C-DNC

Accessories 140M

	Description		For Use With		Cat. No.
	IP65 Non-Metallic Enclosure • Knockouts for M20 and M25 fittings • Suitable for flexible cable with internal ground wire or conduit when externally grounded around the outside of the enclosure (no UL/CSA approval)	Black Handle	140M-C		**198E-AYTG2**
		Red/Yellow Handle	140M-C		**198E-AYTJ2**
	Screw Adapter • For screw arrangement of a motor protection circuit breaker • Package quantity = 10		140M-C, D, F; 140U-D		140M-C-N45
	ECO Connecting Module — 12 A • For DOL and reversing starters • Eco-starters mount on single DIN Rail (140M on DIN Rail) • Electrical and mechanical interconnection of 140M and 100-K contactors		140M-C to 100-K	★	**140M-C-PEK12**
	ECO Connecting Modules — 25 A • Eco-starters mount on single DIN Rail (140M on DIN Rail) • Electrical and mechanical interconnection of 140M MPCB and 100-C (with AC coils or 24V DC electronic coils) contactors		140M-C to 100-C09…C23	‡	**140M-C-PEC23**
			140M-D to 100-C09…C23	‡	**140M-D-PEC23**
	ECO Connecting Modules — 25 A • Eco-starters mount on single DIN Rail (100-C on DIN Rail) • Electrical and mechanical interconnection of 140M MPCB and 100-C (with AC or DC coils)		140M-C, 140M-D to 100-C09…C23	‡	140M-C-PEC23A
	Connecting Modules — 25 and 45 A • Contactor and MPCB **MUST BE** mounted separately on (2) DIN Rails • Electrical interconnection of 140M and 100-C (with AC coils)		140M-C to 100-C09…C23		**140M-C-PNC23**
			140M-D to 100-C09…C23		**140M-D-PNC23**
			140M-D to 100-C30…C37		140M-D-PNC37
			140M-F to 100-C30…C37		**140M-F-PNC37**
			140M-F to 100-C43		**140M-F-PNC43**
	Flexible Connecting Module — 22 A (25 A) • Flexible electrical interconnection • Allows variable spacing between 140M MPCB and 100-C contactor (with AC or DC coils: 105…145 mm DIN Rail spacing with AC coils, 105…125 mm with DC coils)		140M-C, 140M-D to 100-C09…C43	§	140M-D-PFC23DM
	Coil Modules — 25 A and 45 A • For use with Bulletin 103T/107T 3-component starters		140M-C, -D to 100-C09…C23		**140M-C-PSC23**
			140M-D, -F to 100-C30…C43		**140M-F-PSC43**

★ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. (Example: **140M-C-PEK12M**).
‡ May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. (Example: **140M-C-PEC23M**).
§ 140M-C / 140-D to 100-C30…C43 allowable I_{th} = 25 A for IEC applications.

Accessories 140M

	Description		For Use With	Cat. No.
	Spacing Adapter • Required for self-protected combination motor controller (Type E) applications of Bul. 140M-C, -D, and -F MPCBs. Not for use with bus bars.		140M-C, -D	**140M-C-TE1**
			140M-F	**140M-F-TE**
	Feeder Block for Compact Busbar • Supply of compact busbars • Increases terminal capacity		140M-C	**140M-C-WBE**
			140M-F	140M-F-WBE
	Feeder Terminal for Compact Busbar • For supply of compact busbars • Top feed — overlaps compact busbar • Meets IEC spacing requirements		140M-C, -D	**140M-C-WTN**
	Feeder Terminal for Compact Busbar • For supply of compact busbars • Top feed — overlaps compact busbar • Meets UL Type E spacing requirements		140M-C, -D	**140M-C-WTEN**
			140M-F	**140M-F-WTE**
	Three-Phase Compact Busbar for 32 A Motor Protection Circuit Breakers — 64 A Max. Continuous Current • 45 mm spacing • For use with front-mounted auxiliary contact	2 connections	140M-C, -D	**140M-C-W452N**
		3 connections		**140M-C-W453N**
		4 connections		**140M-C-W454N**
		5 connections		**140M-C-W455N**
	Three-Phase Compact Busbar for 32 A Motor Protection Circuit Breakers — 64 A Max. Continuous Current • 54 mm spacing • For use with side-mounted auxiliary contact	2 connections	140M-C, -D	**140M-C-W542N**
		3 connections		**140M-C-W543N**
		4 connections		**140M-C-W544N**
		5 connections		**140M-C-W545N**
	Three-Phase Compact Busbar for 45 A Motor Protection Circuit Breakers — 115 A Max. Continuous Current • 54 mm spacing • For use with front-mounted auxiliary contact	2 connections	140M-F	**140M-F-W542**
		3 connections		**140M-F-W543**
		4 connections		140M-F-W544
	Three-Phase Compact Busbar for 45 A Motor Protection Circuit Breakers — 115 A Max. Continuous Current • 63 mm spacing • For use with side-mounted auxiliary contact	2 connections	140M-F	**140M-F-W632**
		3 connections		140M-F-W633
		4 connections		140M-F-W634
	Terminal Cover • For covering of unused compact bus bar terminals • IP2X finger protection • Must be ordered in multiples of 10 (10 pcs/pkg)		140M-C, 140M-D	**140M-C-WSN**
			140M-F	140M-F-WS
	Top Hat Rail Adpapter — 10 mm • Adjusts the depth of the 140M-C to the 140M-D • Allows the use of compact busbars accross both frame sizes • Must be ordered in multiples of 10 (10 pcs/pkg)		140M-C	140-KBH2

Molded Case Circuit Breakers 140UE

Frame Reference		**H-Frame**		**J-Frame**		**L-Frame**		**M-Frame**		**N-Frame**	
Current Range		20…160 A		70…250 A		100…630 A		300…800 A		600…1250 A	
No. of Poles		3, 4		3, 4		3, 4		3		3, 4	
Dimensions (mm)	Height	140		178		258		406		406	
	Width	76		105		140		210		210	
	Depth	76		103		104		140		140	
Interrupting Ratings: kA		I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
50 Hz	220…240V	25, 35, 85, 100	50%	65, 85, 100	100%	65, 85, 100	100%	65, 100	100%	200, 200	100%
	380…415V	18, 25, 40, 70	50%	23, 40, 70	100%	35, 50, 70	100%	50, 70	100%	70, 100	100%
	690V	6, 6, 7, 8	50%	6, 6, 7, 8	50%	2, 20, 25	50%	20, 25	100%	35, 50	50%
60 Hz NEMA		On request									
Protection Type											
Thermal-Magnetic		FF, AF		AA		AA		AF		—	
Electronic		—		✓		✓		✓		✓	
Internal Accessories											
Alarm (Trip) Contact		✓		✓		✓		✓		✓	
Auxiliary Shields		✓		✓		✓		✓		✓	
Aux/Alarm Combination		✓		✓		✓		✓		✓	
Shunt Trip		✓		✓		✓		✓		✓	
Undervoltage Release		✓		✓		✓		✓		✓	
Field Installable		✓		✓		✓		✓		✓	
External Accessories											
Padlockable Hasp		✓		✓		✓		✓		✓	
Terminal Covers		✓		✓		✓		✓		✓	
Flex-Cable Operating Mech.		✓		✓		✓		✓		✓	
Variable Depth Rotary Operating Mechanism		✓		✓		✓		✓		✓	
Direct Coupler Rotary Operating Mechanism		✓		✓		✓		✓		—	
Plug-in Base		✓		✓		✓		—		—	
Slide Bar Interlock		✓		✓		✓		✓		✓	
Standards Compliance											
IEC 60947-2		✓		✓		✓		✓		✓	
CE		✓		✓		✓		✓		✓	
KEMA-KEUR		✓		✓		✓		✓		✓	
Product Selection		**See page 1-19**		**See page 1-20**		**See page 1-21**		**See page 1-22**		**See page 1-22**	

Circuit Breakers 140UE — 160 A, H-Frame

- Thermal Magnetic Trip
- 18, 25, 40, 70 kA Breaking Capacity @ 415V (50 Hz)
- 3-pole, 4-pole

Approvals
- IEC 60947-2, CE, KEMA-KEUR

Note: Terminal box lugs and mounting hardware provided as standard

25 kA, Thermal-Magnetic, Adjustable Thermal-Fixed Magnetic

Rated Operational Current (I_n)	Thermal Trip (I_r = 0.8…1.0 x I_n)	Magnetic Trip (I_m = 10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
20	16…20	500	25	13					140UE-H2E3-C20
25	20…25	500	25	13					140UE-H2E3-C25
32	25…32	500	25	13					**140UE-H2E3-C32**
40	32…40	500	25	13					140UE-H2E3-C40
50	40…50	500	25	13					**140UE-H2E3-C50**
63	50…63	630	25	13					**140UE-H2E3-C63**
80	63…80	800	25	13					**140UE-H2E3-C80**
100	80…100	1000	25	13					**140UE-H2E3-D10**
125	100…125	1250	25	13					**140UE-H2E3-D12**
160	125…160	1600	25	13					**140UE-H2E3-D16**

Isolation Disconnector — IEC 60947-3

Rated Operational Current (I_n)	Thermal Trip (I_r = I_n), Fixed	Magnetic Trip (I_m = 10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
160	—	1600	25	25			3	3	140UE-H2S3-D16

See Publication 140UE-SG001… for 4-pole types and different breaking capacity.

Circuit Breakers 140UE — 250 A, J-Frame

- Thermal Magnetic Trip
- Electronic Trip LS, LSI, LSG and LSIG
- 25, 40, 70 kA Breaking Capacity @ 415V (50 Hz)
- 3-pole, 4-pole

Approvals
- IEC 60947-2, CE, KEMA-KEUR

40 kA, Assembled Circuit Breakers, Thermal-Magnetic Trip Units

Rated Operational Current (I_n)	Thermal Trip (I_r = 0.8…1.0 x I_n)	Magnetic Trip (I_m = 5…10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
80	64…80	400…800	40	40	35	20	12	6	140UE-J4F3-C80
100	80…100	500…1000	40	40	35	20	12	6	140UE-J4F3-D10
125	100…125	625…1250	40	40	35	20	12	6	140UE-J4F3-D12
160	128…160	800…1600	40	40	35	20	12	6	140UE-J4F3-D16
200	160…200	1000…2000	40	40	35	20	12	6	**140UE-J4F3-D20**
250	200…250	1250…2500	40	40	35	20	12	6	**140UE-J4F3-D25**

Isolation Disconnector — IEC 60947-3

Rated Operational Current (I_n)	Thermal Trip (I_r = 0.8…1.0 x I_n)	Magnetic Trip (I_m = 10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
250	—	2500	70	70	25	10	14	7	140UE-J7S3-D25

See Publication 140UE-SG001… for 4-pole types, electronic trip units and different breaking capacity.

Circuit Breakers 140UE — 630 A, L-Frame

- Thermal Magnetic Trip
- Electronic Trip LS, LSI, LSG and LSIG
- 35, 50, 70 kA Breaking Capacity @ 415V (50 Hz)
- 3-pole, 4-pole

Approvals
- IEC 60947-2, CE, KEMA-KEUR

Circuit breakers can be assembled from a circuit breaker frame and a trip unit, or purchased as assembled units.

50 kA, Assembled Circuit Breakers, Thermal-Magnetic Trip Units

Rated Operational Current (I_n)	Thermal Trip (I_r = 0.8…1.0 x I_n)	Magnetic Trip (I_m = 5…10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
250	200…250	1250…2500	50	50	25	25	20	10	140UE-L5F3-D25
320	256…320	1600…3200	50	50	25	25	20	10	140UE-L5F3-D32
400	320…400	2000…4000	50	50	25	25	20	10	140UE-L5F3-D40
500	400…500	2500…5000	50	50	25	25	20	10	**140UE-L5F3-D50**
630	504…630	3150…6300	50	50	25	25	20	10	**140UE-L5F3-D63**

50 kA, Assembled Circuit Breakers, Electronic Trip Units

Rated Operational Current (I_n)	Adjustment Range [A]		Protection Type	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
	Thermal Trip I_r = 0.4…1.0 x I_n	Magnetic Trip I_m = 2…10 x I_n		380…415V		500V		690V		Cat. No.
630	250…630	1260…6300	LS	50	50	25	25	20	10	140UE-L5L3-D63
630	250…630	1260…6300	LSI	50	50	25	25	20	10	140UE-L5H3-D63
630	250…630	1260…6300	LSG ★	50	50	25	25	20	10	140UE-L5G3-D63
630	250…630	1260…6300	LSIG ★	50	50	25	25	20	10	140UE-L5I3-D63

★ Ground Fault Functions: I_G = 0.2…1.0 I_n

Isolation Disconnector — IEC 60947-3

Rated Operational Current (I_n)	Thermal Trip (I_r = I_n)	Magnetic Trip (I_m = 10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
[A]	[A]	[A]	380…415V		500V		690V		Cat. No.
630	—	6300	70	70	32	32	25	13	140UE-L7S3-D63

See Publication 140UE-SG001… for 4-pole types and different breaking capacity.

Circuit Breakers 140UE — 800 A, M-Frame

- Thermal Magnetic Trip
- Electronic Trip LS, LSI, LSG and LSIG
- 50, 70 kA Breaking Capacity @ 415V (50 Hz)
- 3-pole

Approvals
- IEC 60947-2, CE, KEMA-KEUR

50 kA, Assembled Circuit Breakers, Electronic Trip Units

Rated Operational Current (I_n)	Adjustment Range [A]		Protection Type	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
	Thermal Trip I_r = 0.5…1.0 x I_n	Magnetic Trip I_m = 2…8 x I_n		380…415V		500V		690V		Cat. No.
800 A	400…800	800…6400	LS	50	50	25	25	20	10	140UE-M5L3-D80
			LSI	50	50	25	25	20	10	140UE-M5H3-D80
			LSG ★	50	50	25	25	20	10	140UE-M5G3-D80
			LSIG ★	50	50	25	25	20	10	140UE-M5I3-D80

★ Ground Fault Functions: I_G = 0.2…1.0 I_n

See Publication 140UE-SG001… for 4-pole types, thermal magnetic trip units and different breaking capacity.

Circuit Breakers 140UE — 1250 A, N-Frame

- Electronic Trip LS, LSI, LSG and LSIG
- 70 kA, 100 kA Breaking Capacity @ 415V (50 Hz)
- 3-pole, 4-pole

Approvals
- IEC 60947-2, CE, KEMA-KEUR

Note: Terminal box lugs and mounting hardware must be ordered separately.
See page 1-24 or publication 140UE-SG001…

70 kA, Assembled Circuit Breakers, Electronic Trip Units

Rated Operational Current I_n [A]	Adjustment Range I_r [A]		Protection Type	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
	Thermal Trip I_r = 0.5…1.0 x I_n	Magnetic Trip I_m = 2…8 x I_n		380…415V		500V		690V		Cat. No.
1250	600…1250	2400..10000	LS	70	50	35	18	25	13	140UE-N7L3-E12
			LSI	50	50	40	20	20	10	140UE-N5H3-E12
			LSG	50	50	40	20	20	10	140UE-N5G3-E12
			LSIG	50	50	40	20	20	10	140UE-N5I3-E12

Isolation Disconnector — IEC 60974-3

Rated Operational Current I_n [A]	Magnetic Trip (10 x I_n)	Breaking Capacity (50 Hz) I_{cu} /I_{cs} [kA]						3-Pole
		380…415V		500V		690V		Cat. No.
1250	12500	70	50	35	18	25	13	140UE-N7S3-E12

See Publication 140UE-SG001… for 4-pole types and different breaking capacity.

Internal Accessories — Field Installed

	Description		Frame Size	Cat. No.
	Auxiliary Contact (AX) Electrically indicates "ON/OFF" status of breakers	1 C/O	H, J, L	**140U-H-EA1**
			M	140U-M-EA1
			N	140U-N-EA1
		2 C/O	H, J, L	**140U-H-EA2**
			M	140U-M-EA2
			N	140U-N-EA2
	Alarm Contact (AL) Electrically indicates when the breaker is in the "TRIPPED" state	1 C/O (E.M./L.B.)	H	140U-H-ER1
			J, L	140U-J-ER1
			M	140U-M-ER1
			N	140U-N-ER1
	Auxiliary/Alarm Contact (AX/AL) Combination Combination of auxiliary contact and alarm contact	1 C/O (E.M./L.B.)	H	**140U-H-EA1R1**
			J, L	**140U-J-EA1R1**
			M	140U-M-EA1R1
			N	140U-N-EA1R1
	Shunt Trip (SNT) Provides remote tripping of the circuit breaker Undervoltage trip not available when shunt trip is used	24…60 V, 50/60/DC	H, J, L	**140U-H-SNJ**
		110…240V, 50/60/DC		**140U-H-SND**
		380…440V AC, 220…250V DC		140U-H-SNN
		380…600V, 50/60 Hz		140U-H-SNB
		12…24V, 50/60/DC	M	140U-M-SNJ
		110…240V AC, 110…125V DC		140U-M-SND
		380…440V AC, 220…250V DC		140U-M-SNN
		480…600V, 50/60 Hz		140U-M-SNB
		12…24V, 50/60/DC	N	140U-N-SNJ
		110…240V AC		140U-N-SND
		380…440V AC, 220…250V DC		140U-N-SNN
		480…600V, 50/60 Hz		140U-N-SNB
	Undervoltage Release (UVT) Automatically trips breaker when voltage falls between preset value, 35…70% Shunt trip is not available when undervoltage release is used	24V, 50/60Hz AC; 24V DC	H, J, L	**140U-H-UJ**
		110…127V, 50/60 Hz		**140U-H-UD**
		208…240V, 50/60 Hz		**140U-H-UA**
		380…500V, 50/60 Hz		140U-H-UB
		24V, 50/60 Hz	M	140U-M-UJ
		110…127V, 50/60 Hz		140U-M-UD
		208…240V, 50/60 Hz		140U-M-UA
		380…500V, 50/60 Hz		140U-M-UB
		24V, 50/60 Hz	N	140U-N-UJ
		110…127V, 50/60 Hz		140U-N-UD
		208…240V, 50/60 Hz		140U-N-UA
		380…500V, 50/60 Hz		140U-N-UB

See Publication 140UE-SG001… for 4-pole types and different breaking capacity.

External Accessories

	Description		Frame Size	PQ	Cat. No.
	Terminal Shields IP20 Ingress Protection Rating	3-pole MCCBs	H	1	**140U-H-TS**
			I		**140U-I-TS1**
			J		**140U-J-TS**
			L		**140U-L-TS**
	Phase Barriers Provides additional phase clearance when special connections that extend past the circuit breaker housing are required	3-pole MCCBs	H	2	140U-H-PB
			I		140U-I-PB
			J		140U-J-PB
			L		140U-L-PB
			M		140U-M-PB
			N		140U-N-PB
	Rotary, Direct Couple Operating Mechanism Rotary handle - IP42 UL Type 1 Breaker mounted	Black Handle	H	1	140U-H-RCB
			I		140U-I-RCB
			J		140U-J-RCB
			L		140U-L-RCB
		Red/Yellow Handle	H	1	140U-H-RCR
			J		140U-J-RCR
			L		140U-L-RCR
	Rotary, Variable-Depth Operating Mechanism Rotary handle - IP66, UL Type 3/12/4/4X 12 in. (30.48 cm) operating rod Operating rod 30.5 cm	Black Handle	H	1	**140U-H-RVM12B**
			J		**140U-J-RVM12B**
			L		**140U-L-RVM12B**
			M		140U-M-RVM12B
			N		**140U-N-RM12B**
		Red/Yellow Handle	H	1	**140U-H-RVM12R**
			J		**140U-J-RVM12R**
			L		140U-L-RVM12R
			M		140U-M-RVM12R
	Rotary, Variable-Depth Operating Mechanism Rotary handle - IP66, UL Type 3/12/4/4X 21 in. (53.34 cm) operating rod Operating rod 53 cm	Black Handle	H	1	**140U-H-RVM21B**
			J		**140U-J-RVM21B**
			L		**140U-L-RVM21B**
			M		140U-M-RVM21B
		Red/Yellow Handle	H	1	**140U-H-RVM21R**
			J		**140U-J-RVM21R**
			L		140U-L-RVM21R
			M		140U-M-RVM21R
	End Cap Kit Provides three-phase connections for terminal or bolt-on connections Metric hardware provided	3-pole MCCBs	H	1	**140U-H-ECM**
			I	1	140U-I-ECM
			J	1	**140U-J-ECM**
			L	1	**140U-L-ECM**
	Replacement Mounting Hardware (4) M4 - 0.7 x 75 mm	3- or 4-pole MCCBs	H	1	140U-H-MHM
			I	1	140U-I-MHM
			J	1	140U-J-MHM
			L	1	140U-L-MHM
			M, N	1	140U-M-MHM

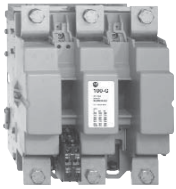
PQ = Package Quantity

See Publication 140UE-SG001… for 4-pole types and different breaking capacity.

Mini-Contactors 100-K / -KR, Contactors 100-C / -CR

Bulletin	**100-K**	**100-KR**	**100-C**	**100-CR**
Type	**MCS Mini Contactor**		**Contactor**	
Rated Current, max. I_e	12 A	9 A	97 A	16 A
Current Rating	5…12 A	5…9 A	9…97 A	9…16 A
Rated Voltage U_e IEC	690V 50/60 Hz, 440V DC		690V 50/60 Hz, 440V DC	
Features	• MCS New Minicontactor Design • IP20 Finger Protection according to IEC 60947 • Rated and Designed for 690V • Top mount pluggable 36 mm wide auxiliary contact blocks 690V • Suppressor module top mount pluggable • Mechanical interlock top mount for AC and DC contactors		• Panel mounting or mounting on 35 mm DIN rail • Reversible coil terminals (line or load side) • AC or DC coil control • Common Accessories • Made of environmentally friendly materials	
Contacts	3 power poles with internal N.O. or N.C. auxiliary contact, or 4 power poles. Optional frontmounted 2 or 4 pole external auxiliary contact block.		3 power poles with internal N.O. or N.C. auxiliary contact or 4 power poles. Optional front or side mounted 1, 2 or 4 pole external auxiliary contact block.	
Coil Voltages	AC = 12…600V AC, 50/60Hz DC = 12…250V DC		AC = 12…600V AC, 50/60Hz DC = 9…250V DC	
Optional Overload Relays	Bimetallic (direct mount)	Electronic or bimetallic (external mount)	Electronic or bimetallic (direct mount)	Electronic or bimetallic (external mount)
Optional Accessories	✓	✓	✓	✓
Conformity to Standards	IEC/EN 60947; IEC/EN 60999; UL 508; UL 1059; CSA 22.2 No. 14; FN F 62-000		IEC/EN 60947; UL 508; CSA 22.2 No. 14	
Approvals	CE marked, cULus listed, CCC		CE marked, cULus listed, CCC	
Product Selection	**See page 1-28**		**See page 1-31**	

Contactors 100-D, 100-G

		
Bulletin	**100-D**	**100-G**
Type	**Contactor**	**Contactor**
Rated Current, max. I_e	860 A	1200 A
Current Rating	115…860 A	550…1200 A
Rated Voltage U_e IEC	1000V 50/60 Hz, 440V DC	690V 50/60 Hz, 440V DC
Features	• Panel mounting only • Made of environmentally friendly materials • AC or DC coil control (Conventional or Electronic) • Integrated PLC interface	• Panel mounting only • Made of environmentally friendly materials • AC or DC coil control (Electronic)
Contacts	3 power poles with external N.O. and N.C. side mounted auxiliary contact. Optional side mounted 2 pole external auxiliary contacts blocks	3 power poles with up to 4 external N.O. and N.C. auxiliary contact blocks. Forth main contact pole
Coil Voltages	**Conventional Coils 100(S)-D115…D180** AC: 24…550V 50 Hz 24…600V 60Hz 100…277V 50/60Hz DC: 24…250V DC **Electronic Coils 100(S)-D115…D300** AC: 24…500V 50/60 Hz DC: 24…255V DC **100(S)-D420** AC: 42…500V 50/60 Hz DC: 48…255V DC	AC = 110…480V AC, 50/60Hz DC = 100…440V DC
Optional Overload Relays	Electronic	—
Optional Accessories	All accessories	All accessories
Conformity to Standards	IEC/EN 60947; UL 508; CSA 22.2 No. 14	IEC/EN 60947, CEI 17-2, 17-3; UTE NF C 63-110; BS 5424; VDE 0660-1; NEMA; ICS
Approvals	CE, UL, CSA, IEC, CCC	CE, UL, CSA, IEC
Product Selection	**See page 1-39**	**See page 1-44**

Safety Contactors 100S-C, 100S-D

Bulletin	**100S-C**	**100S-D**
Type	**Safety Contactor**	**Safety Contactor**
Rated Current, max. I_e	97 A	860 A
Current Rating	9…97 A	115…860 A
Rated Voltage U_e IEC	690V 50/60 Hz, 440V DC	1000V 50/60 Hz, 440V DC
Features	• Positively Guided/Mechanically Linked Auxiliary Contacts • Front-Mounted Auxiliary Contacts: - Permanently Fixed - Protective Cover to Prevent Manual Operation - Red Contact Housing for Easy Identification - Incorporates IEC 947-5-1 “Mechanically Linked” Symbol • AC or DC coil control • SUVA Third-Party Certification	• Positively Guided/Mechanically Linked Auxiliary Contacts which are required in feedback circuit for modern safety applications. • The Positively Guided N.C. Auxiliary Contacts will not change the state when a power contact welds.
Contacts	3 Main Contacts	3 Main Contacts
Coil Voltages	AC = 12…600V AC, 50/60Hz DC = 12…250V DC	**Conventional Coils 100(S)-D115…D180** AC: 24…550V 50 Hz 24…600V 60Hz 100…277V 50/60Hz DC: 24…250V DC **Electronic Coils 100(S)-D115…D300** AC: 24…500V 50/60 Hz DC: 24…255V DC **100(S)-D420** AC: 42…500V 50/60 Hz DC: 48…255V DC
Optional Overload Relays	—	—
Optional Accessories	Side-mount auxiliary contacts, surge suppressors, mechanical interlocks	Side-mount auxiliary contacts, surge suppressors, IP20 terminal blocks, terminal shields, terminal covers, connecting components, terminal lugs
Conformity to Standards	EN 50205; UL 508; CSA C22.2 No. 14; IEC/EN 60947-4; IEC 60947-4-1 Annex H — Mirror Contacts; IEC 60947-5-1 Annex L — Mechanically Linked Contacts	IEC 60947-4-1 / A1: 2002-09, Annex F CSA C22.2 No. 14, UL 508
Approvals	CE Marked, CSA Certified (Certification No. LR13908), UL Listed (File No. E3125, Guide No. NLDX), SUVA Third-Party Certified	CE Marked, CSA Certified, UL Listed, SUVA Third-Party Certified
Product Selection	**See page 1-32**	**See page 1-40**

Mini-Contactors 100-K / 100-KR

- Compact size, same dimensions for AC and DC
- 5, 9, and 12A Contactors rated 690V
- IP2X Finger Protection
- Optional integrated surge suppressor
- Compatible with 193-K bimetallic overload relay

Mini Contactors with 3 Main Contacts

Rated Operational Current (I_e) [A]		Ratings for switching AC motors - AC-2, AC-3	Auxiliary Contacts			
		3Ø kW (50 Hz)				
AC-3	AC-1	400/415V	N.O.	N.C.		Cat. No.
Screw Terminals						
5	20	2.2	1	0	★	**100-K05⊗10**
			0	1	★	**100-K05⊗01**
9	20	4	1	0	★	**100-K09⊗10**
			0	1	★	**100-K09⊗01**
12	20	5.5	1	0	★	**100-K12⊗10**
			0	1	★	**100-K12⊗01**
Spring Clamp Terminals						
5	10	2.2	1	0	★	**100-KR05⊗10**
			0	1	★	**100-KR05⊗01**
9	10	4	1	0	★	**100-KR09⊗10**
			0	1	★	**100-KR09⊗01**

★ May be ordered in package quantities of 20. Add letter M to the end of the cat. no. Example: **100-K05KF10M**.
⊗ The Cat. No. as listed is incomplete. Select a standard Coil Voltage Code from the table below to complete the Cat. No. Example: 230V, 50/60 Hz: Cat. No. **100-K05⊗10** becomes Cat. No. **100-K05KF10**.

⊗ Coil Voltage Codes for AC and DC Control

AC Control	
Code	Description
KJ	24V 50/60 Hz
KY	48V 50/60 Hz
D	110V 50 Hz
KF	230V 50/60 Hz
KN	400V 50/60 Hz

DC Control	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
ZD	110V DC
ZA	220V DC

For other voltages visit our website or consult your local sales office.

Accessories for 100-K / 100-KR

	Description	N.O.	N.C.	For Use With		Cat. No.
Screw Terminals						
	Front-Mounted Auxiliary Contacts • Auxiliary contact blocks • 2- and 4-pole versions • Choice of contact configurations • Snap on, no tools required • Electronic-compatible bifurcated contacts for signals down to 15V/2 mA • Mirror Contact performance per IEC 60947-4-1	0	2	100-K05…K12	★	**100-KFC02**
		1	1		★	**100-KFC11**
		2	0		★	**100-KFC20**
		0	4	100-K05…K12	★	**100-KFC04**
		1	3		★	**100-KFC13**
		3	1		★	**100-KFC31**
		2	2		★	**100-KFC22**
		4	0		★	**100-KFC40**
Spring Clamp Terminals						
	Front-Mounted Auxiliary Contacts • Auxiliary contact blocks • 2- and 4-pole versions • Choice of contact configurations • Snap on, no tools required • Electronic-compatible bifurcated contacts for signals down to 15V/2 mA • Mirror Contact performance per IEC 60947-4-1	0	2	100-K	★	**100-KRFC02**
		1	1	100-K	★	**100-KRFC11**
		2	0	100-K	★	**100-KRFC20**
		0	4	100-K	★	**100-KRFC04**
		1	3	100-K	★	**100-KRFC13**
		3	1	100-K	★	**100-KRFC31**
		2	2	100-K	★	**100-KRFC22**
		4	0	100-K	★	**100-KRFC40**

★ May be ordered in package quantities of 10. Add letter M to the end of the cat. no. Example: **100-KFC02M**.

Accessories for 100-K / 100-KR

	Description		For Use With	PQ	Cat. No.
	Surge Suppressor • Plug-in type • Limits surge voltage on coil drop-off	**RC Suppressor**			
		24…48V AC	100/104-K/-KR, 700-K/-KR	★	**100-KFSC50**
		110…280V AC		★	**100-KFSC280**
		380…480V AC		★	100-KFSC480
		MOV Suppressor			
		12…55V AC, 12…77V DC	100/104-K/-KR, 700-K/-KR	★	**100-KFSV55**
		56…136V AC, 78…180V DC		★	**100-KFSV136**
		137…277V AC, 181…250V DC		★	**100-KFSV277**
		Diode Suppressor			
		12…250V DC	100/104-K/-KR, 700-K/-KR	★	**100-KFSD250**
	Mechanical Interlock • For interlocking of two adjacent contactors • No added width to contactor assembly • Front mount plug-in type • Optional auxiliary contact blocks and suppressor modules mount onto the interlock		100/104-K/-KR, 700-K/-KR		**100-KMCH**
	ECO Connecting Module — 12 A • For DOL and reversing starters • Eco-starters mount on single DIN Rail (140M on DIN Rail) • Electrical and mechanical interconnection of 140M and 100-K contactors	Connects: 140M-C circuit breakers with 100-K contactors	140M-C to 100-K	1★	**140M-C-PEK12**
	Power Wiring Kit For Reversing and Star/Delta combinations. Star-point bridge not included. Min. interruption time 50 ms	—	100-K	1	**100-KPR**
	Feeder Terminal for Compact Bus Bars Max. current 34 A	Supply of compact bus bars	100-K	1	100-KWT
	Three-Phase Compact Bus Bars Max. current 34 A	For 100-K, 5…12 A contactors 45 mm spacing (3 connections)	100-K	1	**100-KW453**
		For 100-K, 5…12 A contactors 45 mm spacing (4 connections)		1	100-KW454

★ May be ordered in package quantities of 10. Add letter M to the end of the cat. no. Example: **100-KFSC50M**.
PQ = Package Quantity

Contactors 100-C / 100-CR

- Compact Sizes from 4…55 kW (9…97 A)
- AC and DC Coil Control
- Common Accessories for All Contactor Sizes
- Front and Side Mounting of Auxiliary Contacts
- Electronic and Pneumatic Timing Modules
- Space-Saving Coil-Mounted Control Modules
- Reversible Coil Terminations (Line or Load Side)
- All Devices Can Be Attached to 35 mm DIN Mounting Rail

Contactors with 3 Main Contacts

Rated Operational Current (I_e) [A]		Ratings for Switching AC Motors — AC-2, AC-3, AC-4	Auxiliary Contacts			
		3Ø kW (50 Hz)				
AC-3	AC-1	400V/415V	N.O.	N.C.		Cat. No.
Screw Terminals						
9	32	4	1	0	★	**100-C09⊗10**
			0	1	★	**100-C09⊗01**
12	32	5.5	1	0	★	**100-C12⊗10**
			0	1	★	**100-C12⊗01**
16	32	7.5	1	0	★	**100-C16⊗10**
			0	1	★	**100-C16⊗01**
23	32	11	1	0	★	**100-C23⊗10**
			0	1	★	**100-C23⊗01**
30	65	15	0	0	★	**100-C30⊗00**
37	65	18.5/20	0	0	★	**100-C37⊗00**
43	85	22	0	0		**100-C43⊗00**
60	100	32	0	0		**100-C60⊗00**
72	100	40	0	0		**100-C72⊗00**
85	100	45	0	0		**100-C85⊗00**
97	130	55	0	0		**100-C97⊗00**
Spring Clamp Terminals						
9	25	4	1	0	★	100-CR09⊗10
9	25	4	0	1	★	100-CR09⊗01
12	25	5.5	1	0	★	100-CR12⊗10
12	25	5.5	0	1	★	100-CR12⊗01
16	25	7.5	1	0	★	100-CR16⊗10
16	25	7.5	0	1	★	100-CR16⊗01

★ May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. Example: **100-C09KF10M**).
⊗ The cat. no. as listed is incomplete. Select a coil voltage code from the table below.

⊗ Coil Voltage Codes for AC and DC Control

AC Control for 100-C	
Code	Description
KJ	24V 50/60 Hz
KY	48V 50/60 Hz
KD	110V 50/60 Hz
KF	230V 50/60 Hz
KN	400V 50/60 Hz

DC Control for 100-C09…-C43	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
EJ	24V DC electronic coil ‡
ED	110V DC electronic coil ‡
EA	220V DC electronic coil ‡

DC Control for 100-C60…-C97	
Code	Description
DJ	24V DC with integrated diode
DD	110V DC with integrated diode
DA	220V DC with integrated diode

For other voltages visit our website or consult your local sales office.
‡ Extended range. For technical details refer to publication A117.

Safety Contactors 100S-C

- AC / DC control
- 3 / 4 main contacts
- Positively guided contacts according to IEC 947-5-1
- Mechanically coupled Contactor and Auxiliary contact block
- Protection against unintended actuation
- Auxiliary contacts are electronically compatible according to DIN 19240

Rated Operational Current (I_e) [A]		Ratings for Switching AC Motors — AC-2, AC-3, AC-4 3Ø kW (50 Hz) Δ	Contact Configuration: Main Poles N.O.	Main Poles N.C.	Auxillary Contacts N.O.	Auxillary Contacts N.C.		Standard Auxiliary Contact Cat. No. ♣	Bifurcated Auxiliary Contact Cat. No. ♣
AC-3	AC-1	400V/415V							
Safety Contactors with 3 Main Contacts									
9	32	4	3	0	1	4		100S-C09⊗14C	**100S-C09⊗14BC**
			3	0	2	3		100S-C09⊗23C	**100S-C09⊗23BC**
12	32	5.5	3	0	1	4		100S-C12⊗14C	**100S-C12⊗14BC**
			3	0	2	3		100S-C12⊗23C	**100S-C12⊗23BC**
16	32	7.5	3	0	1	4		100S-C16⊗14C	**100S-C16⊗14BC**
			3	0	2	3		100S-C16⊗23C	**100S-C16⊗23BC**
23	32	11	3	0	2	3		100S-C23⊗23C	**100S-C23⊗23BC**
30	65	15	3	0	2	2		100S-C30⊗22C	**100S-C30⊗22BC**
37	65	18.5/20	3	0	2	2		100S-C37⊗22C	**100S-C37⊗22BC**
43	85	22	3	0	2	2		100S-C43⊗22C	**100S-C43⊗22BC**
60	100	32	3	0	2	2	§	100S-C60⊗22C	**100S-C60⊗22BC**
72	100	40	3	0	2	2	§	100S-C72⊗22C	**100S-C72⊗22BC**
85	100	45	3	0	2	2	§	100S-C85⊗22C	**100S-C85⊗22BC**
97	130	55	3	0	2	2	§	100S-C97⊗22C	**100S-C97⊗22BC**
Safety Contactors with 4 Main Contacts									
23	32	11	4	0	0	4		100S-C23⊗404C	**100S-C23⊗404BC**
			3	1	0	4		100S-C23⊗304C	**100S-C23⊗304BC**
			4	0	2	2		100S-C23⊗422C	**100S-C23⊗422BC**

§ Bifurcated front-mount auxiliary contacts on **100S-C60…C97** conform to mirror contact performance only.
♣ For other contact configurations, please consult your local sales office.
Δ Three-phase ratings only apply to contactors with at least three N.O. power poles.
⊗ The cat. no. as listed is incomplete. Select a coil voltage code from the table on page 1-31.

Auxiliary Contacts (For 100-C09…C97 contactors) ★

	Description	N.O.	N.C.	For Use With	Standard Auxiliary Contact Cat. No. ‡	Bifurcated Auxiliary Contact Cat. No. ‡
Screw Terminals						
	Auxiliary Contact Blocks for Front Mounting • 2- and 4-pole • Quick and easy mounting without tools • Electronically-compatible contacts down to 17V, 5 mA • Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types) • Models with equal function with several terminal numbering choices • 1L = Late break N.C./early make N.O. • Bifurcated versions for switchingdown to 5V, 3 mA also available §	0	2	100-C all	**100-FA02**	100-FAB02
				C30⊗00…C97⊗00	100-FB02	100-FBB02
		1	1	100-C all	**100-FA11**	100-FAB11
				C30⊗00…C97⊗00	**100-FB11**	100-FBB11
				C09⊗10…C23⊗10	**100-FC11**	100-FCB11
		2	0	100-C all	**100-FA20**	100-FAB20
				C30⊗00…C97⊗00	100-FB20	100-FBB20
		0	4	100-C all	**100-FA04**	100-FAB04
		1	3	100-C all	**100-FA13**	100-FAB13
		2	2	100-C all	**100-FA22**	100-FAB22
				C30⊗00…C97⊗00	**100-FB22**	100-FBB22
				C09⊗10…C23⊗10	**100-FC22**	100-FCB22
		3	1	100-C all	**100-FA31**	100-FAB31
				C09⊗10…C23⊗10	**100-FC31**	100-FCB31
		4	0	100-C all	**100-FA40**	100-FAB40
		1+1L	1+1L	100-C all	**100-FAL22**	—
Spring Clamp Terminals						
	Auxiliary Contact Blocks for Front Mounting • 2- and 4-pole • Quick and easy mounting without tools • Electronic-compatible contacts down to 17V, 5 mA • Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types) • Models with equal function with several terminal numbering choices • 1L = Late break N.C./early make N.O.	0	2	100-CR, 700-CRF	100-CRFA02	—
		1	1		100-CRFA11	—
					100-CRFB11	—
					100-CRFC11	—
		2	0		100-CRFA20	—
		1L	1L		100-CRFBL11	—
		2	2	100-CR, 700-CRF	100-CRFA22	—
					100-CRFC22	—
					100-CRFB22	—
		3	1		100-CRFA31	—
		4	0		100-CRFA40	—
		1+1L	1+1L		100-CRFAL22	—

★ Max. number of auxiliary contacts that may be mounted:
AC coil contactors — max. 4 N.O. contacts on the front of the contactor, 2 N.O. contacts on the side, 4 N.C. front or side, 6 total.
DC coil contactors — max. 4 N.O. contacts on the front of the contactor or max 2 N.O. contacts on the side, 4 N.C. front or side, 4 total.

‡ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **100-SB01M**).

Contactors

Accessories

Auxiliary Contacts (For 100-C09…C97 contactors) ★

	Description	N.O.	N.C.	For Use With	Cat. No. ‡
	Auxiliary Contact Blocks for Side Mounting with Sequence Terminal Designations • 1- and 2-pole • Two-way numbering for right or left mounting on the contactor • Quick and easy mounting without tools • Electronic-compatible contacts down to 17V, 10 mA • Mirror contact performance to the main contactor poles • 1L = Late break N.C./early make N.O.	0	1	100-C	**100-SB01**
		1	0	100-C §	**100-SB10**
		0	2	100-C §	**100-SB02**
		1	1	100-C §	**100-SB11**
		2	0	100-C §	**100-SB20**
		1L	1L	100-C §	**100-SBL11**

★ Max. number of auxiliary contacts that may be mounted:
AC coil contactors — max. 4 N.O. contacts on the front of the contactor, 2 N.O. contacts on the side, 4 N.C. front or side, 6 total.
DC coil contactors — max. 4 N.O. contacts on the front of the contactor or max 2 N.O. contacts on the side, 4 N.C. front or side, 4 total.

‡ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **100-SB01M**).

§ Double numbering — Left-side mounting only is recommended for **cat. no. 100-C09…100-C23** due to double numbering.

Control Modules (For 100-C09…C97 contactors)

	Description	Voltage Range	For Use With	Cat. No.
	Mechanical Interlocks • For interlocking of two contactors. • Common interlock for all Bul. 100-C contactor sizes • Interlocking of different sizes possible • Mechanical and electrical interlocking possible in one module by means of integrated auxiliary contacts • 9 mm dovetail connector included	Mechanical only, without auxiliary contacts	100-C (except 100-C40, -C90)	**100-MCA00**
		Mechanical/ electrical interlock with 2 N.C. auxiliary contacts		**100-MCA02**
	Mechanical Latch • Following contactor latching, the contactor coil is immediately de-energized (off) by the N.C. auxiliary contact (65-66). • Electrical or manual release • 1 N.O. + 1 N.C. auxiliary contacts • Suitable for all Bul. 100-C contactor sizes, 9…97 A	Maximum command duration 0.03…10 s	100-C with AC or 24V DC electronic coils (except 100-C90)	**100-FL11⊗**

⊗ Voltage Suffix Code for Mechanical Latch

The cat. no. as listed is incomplete. Select a voltage suffix code from the table below to complete the cat. no. Example: 230V, 50/60 Hz: **Cat. no. 100-FL11**⊗ becomes **cat. no. 100-FL11KF**.

AC Control	
Code	Description
KJ	24V 50/60 Hz
KY	48V 50/60 Hz

AC Control	
Code	Description
KD	110V 50/60 Hz
KF	230V 50/60 Hz

AC Control	
Code	Description
KN	400V 50/60 Hz

For other AC voltages visit our website or consult your local sales office.

Control Modules (For 100-C09…C97 contactors), continued

	Description		For Use With	Cat. No.
	Pneumatic Timing Modules • Pneumatic timing element contacts switch after the delay time. The contacts on the main control relay continue to operate without delay.	**On-Delay** 0.3…30 s Range 1.8…180 s Range	100-C or 700-CF with AC coils or DC electronic coils	**100-FPTA30** **100-FPTA180**
		Off-Delay 0.3…30 s Range 1.8…180 s Range	100-C all, 700-CF all	**100-FPTB30** **100-FPTB180**
	Electronic Timing Modules — On-Delay Delay of the contactor or control relay solenoid. The contactor or control relay is energized at the end of the delay time.	**On-Delay** 0.1…3 s Range 1…30 s Range 10…180 s Range 110…240V, 50/60 Hz 110…250V DC	100-C or 700-CF with 110…240V, 50/60 Hz or 110…250V DC coils	**100-ETA3** **100-ETA30** **100-ETA180**
		On-Delay 0.1…3 s Range 1…30 s Range 10…180 s Range 24…48V DC	100-C or 700-CF with 24…48V DC coils	**100-ETAZJ3** **100-ETAZJ30** 100-ETAZJ180
	Electronic Timing Modules — Off-Delay Delay of the contactor or control relay solenoid. After interruption of the control signal, the contactor or control relay is de-energized at the end of the delay time.	**Off-Delay** 0.3…3 s Range 1…30 s Range 10…180 s Range 110…240V, 50/60 Hz	100-C or 700-CF with 110…240V 50/60 Hz coils	100-ETB3 **100-ETB30** 100-ETB180
		Off-Delay 0.3…3 s Range 1…30 s Range 10…180 s Range 24V, 50/60 Hz	100-C09…C37 or 700-CF with 24V 50/60 Hz coils	100-ETBKJ3 100-ETBKJ30 100-ETBKJ180
	Electronic Timing Modules • Delay of the contactor solenoid. Contactor K 3 (Y) is de-energized (off) and K 2 (D) is energized (on) after the end of the set Y end time. (Switching delay at 50 ms.) • Continuous adjustment range • High repeat accuracy	**Transition Time Y Contactor** 1…30 s Range 110…240V, 50/60 Hz	100-C with 110…240V, 50/60 Hz coils	**100-ETY30**
	Electronic Star-Delta Timing Relay Output Y picks up when the supply voltage is applied and resets again after time t. After a fixed changeover time tu, output relay Δ picks up and remains energized until the supply voltage is interrupted.	• 22.5 mm width 24…48V DC, 24…240V AC, 50/60 Hz	100-K, 100-C, 100-D	**700-FSY2DU23**
		• 22.5 mm width 346…440V AC, 50/60 Hz		**700-FSY2DA40**
		• 17.5 mm width 24…48V DC 24…240V AC. 50/60 Hz	100-K, 100-C, 100-D	**700-FEY2QU23**

Control Modules (For 100-C09…C97 contactors), continued

	Description	Voltage Range	For Use With		Cat. No.
	DC Interface (Electronic) • Interface between the DC control signal (PLC) and the AC operating mechanism of the contactor. • Requires no additional surge suppression on the relay coils	Input: 12V DC Output: 110…240V AC	100-C with AC coils 110…240V AC		100-JE12
		Input: 18…30V DC Output: 110…240V AC			**100-JE**
		Input: 48V DC Output: 110…240V AC			100-JE48
Screw Terminals					
	Surge Suppressors • For limitation of coil switching transients. • Plug-in, coil mounted. • Suitable for 100-C contactor sizes, 9…97 A. • RC, varistor and diode Versions.	**RC Module** AC Operating Mechanism			
		24…48V AC, 50/60 Hz	100-C with AC coils	★	**100-FSC48**
		110…280V AC, 50/60 Hz		★	**100-FSC280**
		380…480V AC, 50/60 Hz		★	100-FSC480
		Varistor Module AC/DC Operating Mechanism			
		12…55V AC/ 12…77V DC	100-C with AC coils or 100-C09…-C43 with DC coils	★	**100-FSV55**
		56…136V AC/ 78…180V DC		★	**100-FSV136**
		137…277V AC/ 181…350V DC		★	**100-FSV277**
		278…575V AC		★	100-FSV575
		Diode Module DC Operating Mechanism			
		12…250V DC	100-C09…-C43 with DC coils ‡	★	**100-FSD250**
Spring Clamp Terminals					
	Surge Suppressors • For limitation of coil switching transients. • Plug-in, coil mounted. • Suitable for 100-C contactor sizes, 9…97 A. • RC, varistor and diode Versions.	**RC Module** AC Operating Mechanism			
		24…48V AC, 50/60 Hz	100-CR, 700-CRF	★	100-CRFSC48
		110…280V AC, 50/60 Hz		★	100-CRFSC280
		380…480V AC, 50/60 Hz		★	100-CRFSC480
		Varistor Module AC/DC Operating Mechanism			
		12…55V AC/ 12…77V DC	100-CR, 700-CRF	★	100-CRFSV55
		56…136V AC/ 78…180V DC		★	100-CRFSV136
		137…277V AC/ 181…350V DC		★	100-CRFSV277
		278…575V AC		★	100-CRFSV575
		Diode Module DC Operating Mechanism			
		12…250V DC	100-CR, 700-CRF ‡	★	100-CRFSD250

★ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **100-FSC48M**.
‡ Not for use with 100-CxxE…

Star-Delta Starter Kits

Power wiring kits were designed to aid in the field assembly of open-transition star-delta and reversing starters that use Bulletin 100-C contactors. These kits include line, load (and start-point) connections.

170-PW23

3-Phase Rating (50 Hz)				Use with Cat. No. 100-...			
230V	380/415V	500V	690V	Delta		Star	
[kW]				1M	2M	1S	Cat. No.
5.5	8	8	8	C09	C09	C09	**170-PW23**
7.5	11	11	11	C12	C12	C09	
10	14	15	14	C16	C16	C12	
14	21	21	19	C23	C23	C12	
18	28	28	28	C30	C30	C16	**170-PW37**
19	35	35	32	C37	C37	C23	
23	40	40	41	C43	C43	C30	**170-PW43**
33	58	60	56	C60	C60	C37	**170-PW72**
39	69	67	70	C72	C72	C43	
47	82	82	81	C85	C85	C60	**170-PW85**
50	90	90	90	C97	C97	C72	

Reversing Starter Kits

	Description	For Use With	Cat. No.
	Reversing Power Wiring Kits • For reversing connection with a solid-state or thermal overload relay	100-C09…C23	**105-PW23**
		100-C30…C37	**105-PW37**
		100-C43	**105-PW43**
		100-C60…C97	**105-PW85**

Marking Systems

	Description	PQ	Cat. No.
	Label Sheet 105 self-adhesive paper labels each, 6 x 17 mm	10	**100-FMS**
	Marking Tag Sheet 160 perforated paper labels each, 6 x 17 mm, to be used with a transparent cover	10	100-FMP
	Transparent Cover To be used with marking tag sheets	100	**100-FMC**
	Snap-In Marker Card		
	6 x 12 mm (120 markers/card) For mini-contactors, circuit breakers 140M-C, -D, -F	5	**1492-M6X12**
	10 x 17 mm (40 markers/card) For contactors, mini-contactors, circuit breakers	5	**1492-MS10X17**

PQ = Package Quantity

Plastic Enclosures for DOL Starters

	Description		For Use With	Cat. No.
	Plastic Enclosures for DOL Starters For Bulletin 100-C09…C23 contactors with overload relays Bulletin 193-ED, -EE or -T1 Protection class IP66 Prestampings for two pilot lights			
	Material: ABS V-0	With blue RESET push button	100-C09…C23 + 193-ED, -EE, -CT	**198E-A0S1**
		With green START and raised red STOP/RESET push buttons, START contact kit included.		**198E-A0S4**
	Material: PC V-0	With blue RESET push button	100-C09…C23 + 193-ED, -EE, -CT	198E-C0S1
		With green START and raised red STOP/RESET push buttons, START contact kit included.		198E-C0S4
	Pushbutton Latch For maintained contact control, enclosures with START/STOP push buttons.		198E-A0S4, 198E-C0S4	198E-PLA
	Neutral Terminal		198E-A…, 198E-C…	**198E-PNT**
	START Contact Kit Included in the enclosure, as spare part only.		198E-A0S4, 198E-C0S4	198E-PCK
	Pilot Lights, see 140A **page 3-10**			

Plastic Enclosures for DOL or Reversing Starters

Description	For Use With	Cat. No.
Enclosure for DOL Starters with Electronic Overload Relay Installation of 193-E* extension modules possible. Operating units and starter components sold separately.		
Enclosure with Cutouts for Start - Stop and Reset Operators Neutral, Ground (PE) terminal and socket for contact blocks included.	100-C09…C23 + 193-ED, -EE, -CT	198E-C2S4
Enclosure for Reversing Starters with Electronic Overload Relay Also suitable for DOL Starters. Installation of 193-E* extension modules possible. Operating units and starter components sold separately.		
Enclosure with Cutouts for Start - Stop and Reset Operators Ground (PE) terminal and socket for Contact Blocks included.	100-C09…C23 + 193-ED, -EE, -CT	198E-C0S4R
Enclosure for DOL or Reversing Starters with Motor Protection Circuit Breaker Operating units and starter components sold separately.		
Enclosure with Cutouts for Start - Stop Operator and Circuit Breaker Operating Handle Ground (PE) terminal and socket for Contact Blocks included.	140M-C, 140M-D + 100-C09…-C23	198E-C0C4R
ECO Connecting Module — 25 A Electrical and mechanical connection between 140M and 100-C	140M-C, 140M-D to 100-C09…C23	140M-C-PEC23A

Contactors 100-D

- Conventional and Electronic Coils
- 3 Main Contacts

100-D105

100-D420

100-D860

Contactors with 3 Main Contacts

Rated Operational Current (I_e) [A]		Ratings for Switching AC Motors — AC-2, AC-3, AC-4	Auxiliary Contacts			
(60 °C)	(40 °C)	3Ø kW (50 Hz)				
AC-3	AC-1	400/415V	N.O.	N.C.		Cat. No.
3-Pole AC-Operated Contactors						
115	250	63	1	1		**100-D115⊗11**
140	250	78	1	1		**100-D140⊗11**
180	250	100	1	1		**100-D180⊗11**
210	350	118	1	1		**100-D210⊗11**
250	350	140	1	1		**100-D250⊗11**
300	450	170	1	1		**100-D300⊗11**
420	540	238	1	1		**100-D420⊗11**
630	800	355	1	1		**100-D630⊗11**
860	1000	500	1	1		**100-D860⊗11**
3-Pole DC-Operated Contactors						
115	250	63	2	1/1L	‡	100-D115⊗22L
			1	1		**100-D115⊗11**
140	250	78	2	1/1L	‡	100-D140⊗22L
			1	1		**100-D140⊗11**
180	250	101	2	1/1L	‡	100-D180⊗22L
			1	1		**100-D180⊗11**
210	350	118	1	1		**100-D210⊗11**
250	350	140	1	1		**100-D250⊗11**
300	450	170	1	1		**100-D300⊗11**
420	540	238	1	1		**100-D420⊗11**
630	800	355	1	1		**100-D630⊗11**
860	1000	500	1	1		**100-D860⊗11**

‡ Conventional Coil: The pickup winding must be interconnected with the N.C. late-breaking auxiliary contact.
⊗ The cat. no. as listed is incomplete. Select a coil voltage code from the table on page 1-41 to complete the cat. no. Example: 230V, 50/60 Hz: Cat. no. **100-D115⊗11** becomes cat. no. **100-D115KF11**.

Safety Contactors 100S-D

- Conventional and Electronic Coils
- 3 Main Contacts

Contactors with 3 Main Contacts

Rated Operational Current (I_e) [A]		Ratings for Switching AC Motors — AC-2, AC-3, AC-4	Auxiliary Contacts			Standard Auxiliary Contact	Bifurcated Auxiliary Contact
60 °C	40 °C	3Ø kW (50 Hz)					
AC-3	AC-1	400/415V	N.O.	N.C. ★		Cat. No.	Cat. No.
3-Pole AC-Operated Contactors							
115	250	63	2	2		100S-D115⊗22C	**100S-D115⊗22BC**
140	250	78	2	2		100S-D140⊗22C	**100S-D140⊗22BC**
180	250	101	2	2		100S-D180⊗22C	**100S-D180⊗22BC**
210	350	118	2	2		100S-D210⊗22C	**100S-D210⊗22BC**
250	350	140	2	2		100S-D250⊗22C	**100S-D250⊗22BC**
300	450	170	2	2		100S-D300⊗22C	**100S-D300⊗22BC**
420	540	238	2	2		100S-D420⊗22C	**100S-D420⊗22BC**
630	800	355	2	2		100S-D630⊗22C	**100S-D630⊗22BC**
860	1000	500	2	2		100S-D860⊗22C	**100S-D860⊗22BC**
3-Pole DC-Operated Contactors							
115	250	63	3	2/1L	‡	100S-D115⊗33LC	—
			2	2		100S-D115⊗22C	**100S-D115⊗22BC**
140	250	78	3	2/1L	‡	100S-D140⊗33LC	—
			2	2		100S-D140⊗22C	**100S-D140⊗22BC**
180	250	101	3	2/1L	‡	100S-D180⊗33LC	—
			2	2		100S-D180⊗22C	**100S-D180⊗22BC**
210	350	118	2	2		100S-D210⊗22C	**100S-D210⊗22BC**
250	350	140	2	2		100S-D250⊗22C	**100S-D250⊗22BC**
300	450	170	2	2		100S-D300⊗22C	**100S-D300⊗22BC**
420	540	238	2	2		100S-D420⊗22C	**100S-D420⊗22BC**
630	800	355	2	2		100S-D630⊗22C	**100S-D630⊗22BC**
860	1000	500	2	2		100S-D860⊗22C	**100S-D860⊗22BC**

★ The N.C. contacts meet IEC 60947-4 Annex F requirements to mirror contact performance. The N.C. mirror contacts are wired in series or parallel and must be used as monitoring contacts with feedback to the safety circuit.

‡ Conventional Coil: The pickup winding must be interconnected with the N.C. late-breaking auxiliary contact.

⊗ The cat. no. as listed is incomplete. Select a coil voltage code from the table on page 1-41 to complete the cat. no. Example: 230V, 50/60 Hz: Cat. no. **100-D115⊗11** becomes cat. no. **100-D115KF11**.

⊗ Coil Voltage Codes for AC Control

Conventional Coil	[V]	24	48	110	120	220-230	230	240	380-400	440	550
-D115…-D180	50 Hz	**K**	Y	**D**	—	A	—	—	N	—	C
	60 Hz	**J**	X	—	**D**	—	—	A	—	**N**	—
-D115	50/60 Hz	—	—	**KN**	—	—	**KF**	—	—	—	—

Electronic Coil w/ EI Interface ★	[V]	24	42-64	110-130	208-277	380-415	440-480	380-500
-D115…-D300	50/60 Hz	**EJ** ‡	EY	ED	**EA**	—	—	**EN**
-D420	50/60 Hz	—	—	ED	**EA**	—	—	**EN**
-D630…-D860	50/60 Hz	—	—	ED	**EA**	EN	EB	—

⊗ Coil Voltage Codes for DC Control

Conventional Coil	[V]	24	48	110	220
-D115…-D180 §	DC	**ZJ**	ZY	ZD	ZA

Electronic Coil w/ EI Interface ★	[V]	24	48-72	110-130	200-255
-D115…-D300	DC	**EZJ**	EZY	EZD	EZA
-D420	DC	—	—	EZD	EZA
-D630…-D860	DC	—	—	ED	EA

★ Signal voltage of the electronic interface (100-D…, 100S-D…): nominal U_e: 24V DC/I_e: 15 mA
Pickup voltage: 13.0V DC…30.2V DC Dropout Voltage: –3.0V DC…+5.0V DC.

‡ Not available with 100(S)-D300

§ For conventional DC coils, the pickup winding must be interconnected with the N.C. late-breaking auxiliary contact(s).

Accessories for 100-D, 100S-D

	Description	N.O.	N.C.	For Use With	Auxiliary Contact: Standard Cat. No.	Auxiliary Contact: Bifurcated Cat. No.
	Auxiliary Contacts • Side-mounted • With IEC sequence terminal designations • Standard contacts 17V/10 mA • Bifurcated contacts for signals down to 5V/2 mA	1	1	100-D left or right inside mounting	**100-DS1-11**	100-DS1-B11H
		1	1	100-D left or right outside mounting	**100-DS2-11**	100-DS2-B11H
		1	1L	100-D left or right inside mounting	**100-DS1-L11**	100-DS1-BL11H
		2	0		**100-DS1-20**	100-DS1-B20H
		2	0	100-D left or right outside mounting	**100-DS2-20**	100-DS2-B20H
	Auxiliary Contacts • Electronic-compatible auxiliary contacts • Ideal for use when switching low-power control circuits • With IEC sequence terminal designations • Contact ratings: AC-12, 250V, 0.1 A AC-15, DC-13, 3...125V, 1...100 mA	1	1	100-D left or right inside mounting	**100-DS1-B11**	—

Accessories for 100-D, 100S-D, Continued

	Description	Suppressor Rating	For Use With	Cat. No.
	Suppressor Module for Bul. 100-D Contactors • For limiting surge voltage when coil circuits are interrupted • Supplied as standard on all conventional DC coil contactors and all electronic coil contactors (as part of the supply module or delivered with separate suppressor module)	**RC Module (AC control) for contactors with conventional coil** 21...48V, 50 Hz; 24...55V, 60 Hz	100-D115...100-D180	100-DFSC48
		95...110V, 50 Hz; 110...127V, 60 Hz		**100-DFSC110**
		180...277V, 50 Hz; 208...277V, 60 Hz		**100-DFSC240**
		380...550V, 50 Hz; 440...600V, 60 Hz		100-DFSC550
		Varistor Module for contactors with conventional coil 55V AC	100-D115...100-D420	100-DFSV55
		56...136V AC		**100-DFSV136**
		137...277V AC		100-DFSV277
		278...600V AC		100-DFSV575
		208...277V AC ★	100-D115...100-D420	**100-DFSV550**

★ For overvoltage category IV (IEC 947 for 100-D...-EI) e.g., lightning protection requirements.

	Description	For Use With	Cat. No.
	Interlock — Mechanical Only • No additional space required	100-D115…100-D420	**100-DMA00**
	Interlock — Dual Electrical/Mechanical • No additional space required • Two N.C. auxiliary contacts	100-D115…100-D860	**100-DMD02**
	Interlock — Dual Electrical/Mechanical • Provides interlocking between Bul. 100-C and Bul. 100-D contactors • Two N.C. auxiliary contacts	100-C60…100-C97 between 100-D115…100-D180	100-DMC02
	Terminal Lugs • Set of two • Protection class IP2X per IEC 60529 and DIN 40 050	100-D115	**100-DTB110**
		100-D115, 100-D140, 100-D180, 100-D115E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
		100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Control Circuit Terminal 2 x 2.5 mm²	Connects to Cat. Nos. 100-D115...D180	100-DAT1
		Connects to Cat. Nos. 100-D210...D420	100-DAT2
	Phase Barriers Set of 4	100-D630…D860, 193-EC_H, 193-EE_H	100-DPB860

Accessories for 100-D, 100S-D, Continued

	Description	Cross-section	For Use With 100-D 115…180	For Use With 100-D 210…420	For Use With 100-D 630…860	Terminal Connection	Cat. No.
	Reversing: Input Connection Wye-Delta: Main-Delta connection	50 mm²	X			Terminal Blocks 100-DTB… Lugs, 100-DL…	**100-D180-VLTB**
		120 mm²		X			100-D420-VLTB
		350 mm²			X	Lugs, 100-DL…	100-D860-VL
	Reversing: Output Connection Wye-Delta: Delta-Wye connection	50 mm²	X			Lugs, 100-DL…	**100-D180-VT**
		120 mm²		X			**100-D420-VT**
		350 mm²			X		100-D860-VT
		50 mm²	X			Terminal Blocks 100-DTB…	**100-D180-VLTB**
	Reversing: Input Connection Wye-Delta: Main-Delta connection	80 mm²		X			100-D420-VLTB
	Wye-Delta: Neutral bridge	—	X			—	**100-D180-VYU**
		—		X		—	**100-D420-VYU**
		—			X	—	100-D860-VYU
	Power Wiring Kits (for contactors using 100-DL lug kits)	For 100-D115…D180	Reversing				100-DPW180
			Two-speed, or changeover				**100-D180-VLTB**
			Wye-Delta/Star-Delta				100-DPY180
		For 100-D210…D420	Reversing				100-DPW420
			Two-speed, or changeover				100-D420-VLTB
			Wye-Delta/Star-Delta				100-DPY420
		For 100-D630…D860	Reversing				100-DPW860
			Two-speed, or changeover				100-D860-VL
	Terminal Shields • Set of two • Protection class IP10 per IEC 60529 and DIN 40 050 • For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D115…100-D180, 193-FE					**100-DTS180**
		100-D210...100-D420, 193-FE					**100-DTS420**
	Terminal Covers • Protection class IP20 per IEC 60529 and DIN 40 050 • For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D115…100-D180, 193-EC_F, 193-EE_F					**100-DTC180**
		100-D210...100-D420, 193-EC_G, 193-EE_G					**100-DTC420**
		100-D630…100-D860, 193-EC_H, 193-EE_H					**100-DTC860**

Contactors 100-G

- 315...710 kW, 400V
- 350…900 Hp, 460/575V
- 3-Pole Contactors
- 4th Add-On Neutral Switching Pole
- AC and DC Control
- Horizontal and Vertical Interlocking
- Mechanical Latching
- Meets IEC, CE, UL, and cUL Standards and Approvals

Contactors with 3 Main Contacts

Rated Operational Current I_e [A]	Ratings for Switching AC Motors — AC-2, AC-3	Auxiliary Contacts			
AC-1	3Ø kW (50 Hz)				
40 °C	400V	N.O.	N.C.		Cat. No.
760	315	2	2		100-G550⊗22
1000	400	2	2		100-G700⊗22
1100	500	2	2		100-G860⊗22
1200	560	2 ★	2	‡	100-G1000⊗12
1350	710	2 ★	2		100-G1200⊗12

★ 1 N.O. contact used in control circuit
‡ No UL/cUL

⊗ Coil Voltage Codes for AC and DC Control

	[V]	100-110	110-120	200-220	220-240	345-380	380-415	440-480
100-G550...100-G860	50/60 Hz	—	**KD**	—	**KF**	—	**KN**	KB
	DC	KD	—	KF	—	KN	—	—

	[V]	110	110-115	220	220-230	240	380-400	480
100-G1000...100-G1200	50/60 Hz	—	**KD**	—	**KF**	KA	**KN**	KU
	DC	ZD	—	ZA	—	—	—	—

For other voltages visit our website or consult your local sales office.

Accessories for 100-G

	Description	For Use With	Cat. No.
	Auxiliary Contact Block • For mounting between T1 & T2 or between T2 & T3 • Adjustable; provides normal, delayed, or overlapping contacts • Max. two blocks/contactor • Alternate terminal marking tags included • 2 N.O. and 2 N.C. contacts	100-G550…100-G860	**100-EF22**
	Auxiliary Contact Block • For side mounting on either side of the contactor • Max. four blocks/contactor • Alternate terminal marking tags included • 1 N.O. and 1 N.C. contact	100-G1000…100-G1200	100-EB11
	1 N.C. and 1 N.O. late break	100-G1000, 100-G1200	100-EB11DC
	Fourth Add-On Neutral Switching Pole • Left- or right-side mountable • Note: no UL/cUL	100-G550	100-NP500-5
		100-G700, 100-G860	100-NP500-6
		100-G700, 100-G860	100-NP1000-6
		100-G1000, 100-G1200	100-NP1000-7
	Mechanical Latch • Mechanical life: 0.5 million operations • Direct and Impulse Control	100-G550	100-FLAM5⊗
		100-G700, 100-G860	100-FLAM6⊗
	Mechanical Interlock — Horizontal	100-G550 to 100-G550	100-MC00-5H
		100-G550 to 100-G700 or 100-G860	100-MC00-56H
		100-G700 or 100-G860 to 100-G700 or 100-G860	100-MC00-6H
		100-G700 or 100-G860 to 100-G1000 or 100-G1200	100-MC00-67H
		100-G1000 or 100-G1200 to 100-G1000 or 100-G1200	100-MC00-7H
	Mechanical Interlock — Vertical	100-G550 to 100-G550	100-MC00-5V
		100-G550 to 100-G700 or 100-G860	100-MC00-56V
		100-G700 or 100-G860 to 100-G700 or 100-G860	100-MC00-6V
		100-G700 or 100-G860 to 100-G1000 or 100-G1200	100-MC00-67V
		100-G1000 or 100-G1200 to 100-G1000 or 100-G1200	100-MC00-7V

⊗ Coil Voltage Codes for Mechanical Latch

	[V]	110…120	220…240	380…415	440…480
100-G550... 100-G860	50/60Hz	**KD**	**KF**	**KN**	KB

For other voltages visit our website or consult your local sales office.

Solid-State Contactors

The Bulletin 156 Solid-State Contactors are ideal replacements for electro-mechanical contactors where fast and demanding switching of loads such as heaters, solenoids, transformers, and motors, is required.

- Compact modular design complete with heatsink
- DIN Rail mountable
- Simple installation
- Available in single-phase, dual-phase, or three-phase version
- Operational current rating 20…90 A
- LED status indication
- AC, DC, and analog control options
- Zero-cross switching

Solid-State Power Contactors

Single-Phase

Current Rating				Operational Voltage	
@ 25 °C	@ 40 °C		Housing Size	24…230V AC	42…600V AC
[A]	[A]	Control Voltage	[mm]	Cat. No.	Cat. No.
20	17	24…275V AC, 24…48V DC	22.5	156-B20AA1	156-B20CA1
		5…24V DC		**156-B20AB1**	**156-B20CB1**
30	25	24…275V AC, 24…48V DC		156-B30AA1	156-B30CA1
		5…24V DC		**156-B30AB1**	**156-B30CB1**
45	38	24…275V AC, 24…48V DC	45	156-B45AA1	156-B45CA1
		5…24V DC		156-B45AB1	156-B45CB1
50	43	24…275V AC, 24…48V DC		156-B50AA1	156-B50CA1
		5…24V DC		156-B50AB1	**156-B50CB1**
70	60	24…275V AC, 24…48V DC	90	156-B70AA1	156-B70CA1
		5…24V DC		156-B70AB1	156-B70CB1
75	64	24…275V AC, 24…48V DC	45 ★	156-B75AA1	156-B75CA1
		5…24V DC		156-B75AB1	156-B75CB1
90	77	24…275V AC, 24…48V DC	90 ★	156-B90AA1	156-B90CA1
		5…24V DC		156-B90AB1	156-B90CB1

★ With fan. External fan supply 24V DC required.

Dual-Phase

Current Rating				Operational Voltage	
@ 25 °C	@ 40 °C		Housing Size	24…230V AC	48…600V AC
[A]	[A]	Control Voltage	[mm]	Cat. No.	Cat. No.
25	20	24…275V AC, 24…190V DC	45	156-B25AA2	156-B25CA2
		5…24V DC		156-B25AB2	**156-B25CB2**
32	25	24…275V AC, 24…190V DC	90	156-B32AA2	156-B32CA2
		5…24V DC		156-B32AB2	156-B32CB2

Three-Phase

Current Rating			Housing Size	Operational Voltage	
@ 25 °C	@ 40 °C			24…230V AC	48…600V AC
[A]	[A]	Control Voltage	[mm]	Cat. No.	Cat. No.
20	16	24…275V AC, 24…190V DC	45	156-B20AA3	156-B20CA3
		5…24V DC		156-B20AB3	**156-B20CB3**
25	20	24…275V AC, 24…190V DC	90	156-B25AA3	156-B25CA3
		5…24V DC		156-B25AB3	**156-B25CB3**
32	26	24…275V AC, 24…190V DC	45 ★	156-B32AA3	156-B32CA3
		5…24V DC		156-B32AB3	156-B32CB3

★ With fan. External fan supply 24V DC required.

Solid-State Specialty Contactors

Single-Phase with Current Monitoring

Current Rating				Housing Size		Operational Voltage	
@ 25 °C	@ 40 °C	Supply Voltage	Control Voltage			24…265V AC	42…660V AC
[A]	[A]			[mm]	Alarm Type	Cat. No.	Cat. No.
30	27	24V DC	4…32V DC	45	PNP, N.O.	156-B30ABP	156-B30CBP
					NPN, N.O.	156-B30ABN	156-B30CBN
50	36			45	PNP, N.O.	156-B50ABP	156-B50CBP
					NPN, N.O.	156-B50ABN	156-B50CBN

Single-Phase, Single-Pole, Multi-function Analog

Current Rating			Housing Size	Operational Voltage		
@ 25 °C	@ 40 °C			90…265V AC	200…550V AC	410…660V AC
[A]	[A]	Control Input	[mm]	Cat. No.	Cat. No.	Cat. No.
30	23	0…10V DC§	45	156-B30AV1	156-B30BV1	156-B30CV1
		4…20 mA		156-B30AC1	156-B30BC1	156-B30CC1
50	40	0…10V DC§	45	156-B50AV1	156-B50BV1	156-B50CV1
		4…20 mA		156-B50AC1	156-B50BC1	156-B50CC1

§ Requires a 24V AC/DC supply to power the control circuitry of the solid-state contactor.

Starters

Product Line Overview

Open Type Starters

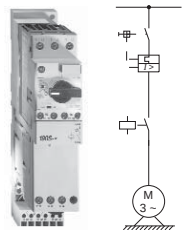
Bulletin	190S / 191S★	190E★ / 191E★	103T★ / 107T★
Type	**Compact Starters**	**Eco Starters**	**3-Component Starters**
Current Range	0.1…45 A	0.1…25 A	0.1…100 A
Motor Range (Max. Kilowatt)	22 kW at 400V	11 kW at 400V	45 kW at 400V
Short Circuit Motor Protection	✓	✓	✓
Overload Protection: Trip Class	10, 15, 20, 30	10	10, 15, 20, 30
Mounting Options			
Standard Busbar Mount	—	—	✓
Iso Busbar Mount	—	—	✓
Panel Mount	✓	✓	✓
Major Components			
140M (MPCB)	✓	✓	✓
100-C Contactors	✓	✓	✓
193-E Overload Relays	—	—	✓
Accessories			
Lockable Knobs	✓	✓	✓
Aux/Trip Contacts for (CB)	✓	✓	✓
Aux Contacts for Contactor	✓	✓	✓
UV/Shunt Trip for Circuit Breaker	✓	✓	✓
Product Selection	**See page 1-49**	★See publication A117 for product information.	

Enclosed Starters

Bulletin	103C	107C	109-C	109-C	105-C
Type	**DOL**	**Reversing**	**DOL**	**DOL**	**Reversing**
Components					
140M (MPCB)	✓	✓	—	—	—
100-C Contactor	✓	—	✓	✓	—
104-C Reversing	—	✓	—	—	✓
193 Overload Relay	—	—	✓	✓	✓
Max. Current	16 A	16 A	23 A	43 A	23 A
Enclosure Material	Molded Plastic			Large Molded Plastic	
Dimensions HxWxD [mm]	250x125x125		208x98x111	250x125x125	
Operation					
With START/STOP Multifunction Pushbutton (3 Functions)	✓	✓			
With START (Green) and STOP (Raised Red) Pushbuttons			✓		
With RESET (Blue) Pushbutton			✓		
With START/STOP Multifunction Pushbutton (2 Functions) and Reset				✓	
With START/STOP Multifunction Pushbutton (3 Functions) and Reset					✓
Product Selection	**See page 1-50**		**See page 1-51**		

Direct On-Line Starters, Bulletin 190S

- 190S Compact Starter with Bulletin 140M Circuit Breaker and Bulletin 100-C Contactor
- Short-Circuit Coordination Type "1" and "2" according to IEC 60947-4-1
- Complete unit, ready for connection with internal wiring
- Auxiliary Contacts Wired to Terminal Block at Bottom of Starter Assembly
- Accessories: Bulletin 140M Circuit Breakers and 100-C Contactors
- Removable cover
- IEC and UL/CSA compliant
- Mounting Versions:
  - Screw Fixing
  - Snap Fixing on (1) or (2) 35 mm DIN Rails
  - Snap Fixing on (1) 75 mm DIN Rail



Note: Line voltage and short-circuit coordination see MCS Star.
Verify that the circuit breaker can be set to the rated motor current!

Standard Configurations for AC-Control

Standard Motors AC-3, 3-Phase	Max. Fault Current I_q 400/415V	Motor Current Setting Range	Magnetic Trip Current	Direct On-Line Starters
[kW]	Type 2 [kA]	[A]	[A]	Cat. No.
		C-Frame		
—	65	0.10…0.16	2.1	190S-AN⊗2-CA16C
0.06	65	0.16…0.25	3.3	190S-AN⊗2-CA25C
0.09	65	0.25…0.40	5.2	190S-AN⊗2-CA40C
0.18	65	0.40…0.63	8.2	190S-AN⊗2-CA63C
0.25	65	0.63…1.0	13	190S-AN⊗2-CB10C
0.55	65	1.0…1.6	21	190S-AN⊗2-CB16C
0.75	65	1.6…2.5	33	190S-AN⊗2-CB25C
1.5	50	2.5…4.0	52	190S-AN⊗2-CB40C
2.2	50	4.0…6.3	82	190S-AN⊗2-CB63C
4	50	6.3…10	130	190S-AN⊗2-CC10C
5.5	50	10…16	208	190S-BN⊗2-CC16C
7.5	50	10…16	208	190S-CN⊗2-CC16C
		D-Frame		
1.5	65	2.5…4.0	52	190S-AN⊗2-DB40C
2.2	65	4.0…6.3	82	190S-AN⊗2-DB63C
4	65	6.3…10	130	190S-AN⊗2-DC10C
5.5	65	10…16	208	190S-BN⊗2-DC16C
7.5	65	10…16	208	190S-CN⊗2-DC16C
10	65	14.5…20	260	190S-DN⊗2-DC20C
11	65	18…25	325	190S-DN⊗2-DC25C
		F-Frame		
15	65	23…32	416	190S-EN⊗3-FC32C
18.5	65	32…45	585	190S-FN⊗3-FC45C
22	65	32…45	585	190S-GN⊗3-FC45C

1 N.O. + 1 N.C. auxiliary contacts on 140M are standard. N.O. auxiliary contact on 100-C (1 N.O. + 1 N.C. for F-Frame types) are standard.

⊗ For AC coil voltage codes, see page 1-31. DC-control voltages and optional configurations on request.

Direct On-Line 103C / Reversing 107C

Enclosure size 2

- 103C 107C enclosed starters consist of a 140M motor protection circuit breaker, a 100-C contactor (103C), respectively a 104-C reversing contactor (107C) in an impact-resistant molded IP 66 enclosure.

		Type	Direct On-Line 103C	Reversing 107C
Ratings AC-3		Short Circuit Coordination Type 1 I_q	IP 66 Molded Plastic Enclosure	
Motor Current Setting Range	Standard Motors AC-3, 3-Phase		With START/STOP Multifunction Push Button	
[A]	[kW]	[kA]	Cat. No.	Cat. No.
0.1…0.16	—	65	**103C-09L⊗-CA16X-1M**	**107C-09L⊗-CA16X-1M**
0.16…0.25	0.06	65	**103C-09L⊗-CA25X-1M**	**107C-09L⊗-CA25X-1M**
0.25…0.4	0.09	65	**103C-09L⊗-CA40X-1M**	**107C-09L⊗-CA40X-1M**
0.4…0.63	0.18	65	**103C-09L⊗-CA63X-1M**	**107C-09L⊗-CA63X-1M**
0.63…1.0	0.25	65	**103C-09L⊗-CB10X-1M**	**107C-09L⊗-CB10X-1M**
1.0…1.6	0.55	65	**103C-09L⊗-CB16X-1M**	**107C-09L⊗-CB16X-1M**
1.6…2.5	0.75	65	**103C-09L⊗-CB25X-1M**	**107C-09L⊗-CB25X-1M**
2.5…4.0	1.5	50	**103C-09L⊗-CB40X-1M**	**107C-09L⊗-CB40X-1M**
4.0…6.3	2.2	50	**103C-09L⊗-CB63X-1M**	**107C-09L⊗-CB63X-1M**
6.3…10	4	65	**103C-12L⊗-CC10X-1M**	**107C-12L⊗-CC10X-1M**
10…16	7.5	65	**103C-12L⊗-DC16X-1M**	**107C-12L⊗-DC16X-1M**

Bulletin 140M motor protector circuit breakers comes separately as a kit.

⊗ Coil Voltage Codes for Enclosed Starters

The cat. no. as listed is incomplete. Select a voltage suffix code from the table below to complete the cat. no. Example: 230V, 50/60 Hz: **Cat. no. 103C-09⊗-CA16X-1M** becomes **cat. no. 103C-09KF-CA16X-1M**.

AC Control for contactor	
Code	Description
KJ	24V 50/60 Hz
KF	230V 50/60 Hz
KN	400V 50/60 Hz

Direct On-Line 109-C / Reversing 105-C

Enclosure size 1

- 109-C enclosed starters are designed using 100-C contactor (9…23 / 43 A) and electronic motor protection overload relays in a molded plastic enclosure (IP 66).
- Motor protection functionality can be easily expanded with the adoption of side-mounted modules (to order separately).
- With the appropriate side module the starter can be connected to a network (EtherNet or DeviceNet).

Ratings AC-3		Type E1 Plus Overload Relay	Direct On-Line 109-C IP 66 (EN/IEC Only) Molded Plastic Enclosure (198E-A0S4)	
Max. I_e	Standard Motors AC-3, 3-Phase	Motor Current Setting Range	With START (Green) and STOP (Raised Red) Push Buttons	With RESET (Blue) Push Button
[A]	[kW]	[A]	Cat. No.	Cat. No.
9	4	1.0…5.0	**109-C09V⊗E1C-1**	**109-C09V⊗E1C-7**
9	4	3.2…16	**109-C09V⊗E1D-1**	**109-C09V⊗E1D-7**
12	5.5	3.2…16	**109-C12V⊗E1D-1**	**109-C12V⊗E1D-7**
16	7.5	3.2…16	**109-C16V⊗E1D-1**	**109-C16V⊗E1D-7**
23	11	5.4…27	**109-C23V⊗E1E-1**	**109-C23V⊗E1E-7**

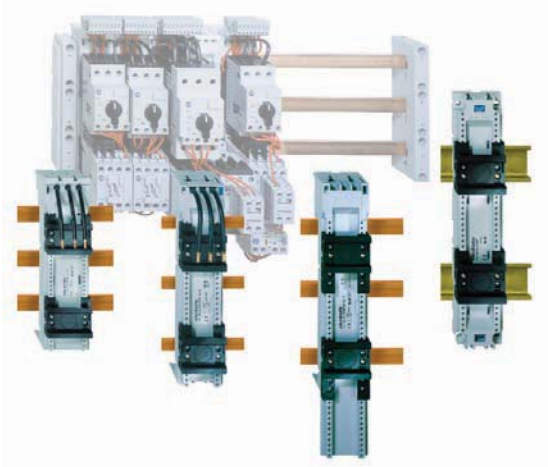
Enclosure size 2

- 105-C enclosed starters use 104-C reversing contactors and 193 solid-state overload relays.
- These reversing starters (9…23 A) incorporate a "dual" interlock that provides both mechanical and electrical interlocking in a single unit.

Ratings AC-3		Type E1 Plus Overload Relay	Direct On-Line 109-C IP 66, Large Molded Plastic Enclosure (198E-C2S4)	Reversing 105-C IP 66, Large Molded Plastic Enclosure
Max. I_e	Standard Motors AC-3, 3-Phase	Motor Current Setting Range	With START/STOP Multifunction Push Button (2 Functions) and Reset	With START/STOP Multifunction Push Button (3 Functions) and Reset
[A]	[kW]	[A]	Cat. No.	Cat. No.
9	4	1.0…5.0	**109-C09L⊗E1C-1M-7**	**105-C09L⊗E1C-1M-7**
9	4	3.2…16	**109-C09L⊗E1D-1M-7**	**105-C09L⊗E1D-1M-7**
12	5.5	3.2…16	**109-C12L⊗E1D-1M-7**	**105-C12L⊗E1D-1M-7**
16	7.5	3.2…16	**109-C16L⊗E1D-1M-7**	**105-C16L⊗E1D-1M-7**
23	11	5.4…27	**109-C23L⊗E1E-1M-7**	**105-C23L⊗E1E-1M-7**
30	15	9…45	**109-C30L⊗E1F-1M-7**	—
37	18.5	9…45	**109-C37L⊗E1F-1M-7**	—
43	22	9…45	**109-C43L⊗E1F-1M-7**	—

Accessories for Electronic Motor Protection Relays refer to page 1-67>
⊗ The cat. no. as listed is incomplete. Select a voltage suffix code from the table on page 1-50

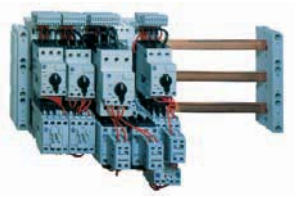
Mounting System

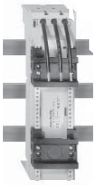


Bulletin	141A
Type	**Mounting System**
Features	• MCS Iso Busbar Modules – for maximal safety. Finger proof even when load feeders removed • MCS Standard Busbar Modules – the economic solution • Circuit Breaker Modules – for circuit breakers 140U / 140M up to 630 A • MCS Mounting Modules – for top hat rail or screw mounting • Meets feeder circuit spacings per UL 508A **MCS Star Software – easy starter configuration according to IEC and UL/CSA standards**
Mounting Options:	
Iso Busbar Mount	✓
Standard Busbar Mount	✓
Panel Mount	✓
Standards/Approvals	CE, UL, CSA
Product Selection	**Page 1-53**

MCS Iso Busbar Modules

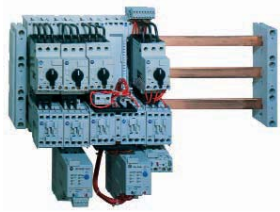
- System finger proof with load feeders removed
- Test position with load circuit isolated
- Consists of a device adapter plate carrying the load feeder components and a busbar module plugging on the busbars
- Preferably for use with control plug (please order separately)
- Modules with suppy wires – lengths optimized for MCS 140M motor protection circuit breakers
- Modules without wire connections – attachable with connection clips to form bigger platforms
- For plugging on 12, 15, 20, 25, 30 mm x 5/10 mm thick busbars



	Description	Rated Thermal Current I_{th} [A]	Width [mm]	Rail(s)	PQ	Cat. No.
	**MCS Iso Busbar Module 200 mm high** • Universal top hat rail(s)	32	45	2	★	**141A-SS45RR25**
			54		★	**141A-SS54RR25**
		63	54		★	141A-SS54RR45
			63		1	**141A-SS63RR45**
		Without electrical connections	45	1	★	141A-SS45R
			54		1	141A-SS54R
	MCS Iso Busbar Module 260 mm high • Universal top hat rail(s)	32	45	2	1	141A-SM45RS25
			54			141A-SM54RS25
		63	54			141A-SM54RS45
			63			141A-SM63RS45
		Without electrical connections	45	1	1	141A-SM45S
			54			141A-SM54S
			63			141A-SM63S
	Spacer Modules for MCS Iso Busbar Modules For spacing of load feeders by 9 mm e.g. for improved cooling. Including connection clips.				10	141A-AS9S
	Micro Switch with wire connections 1 N.C. Contact To wire in serie with the contactor coils drops out when unplugging the device adapter plate.				10	**141A-AS**

★ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. (Example: **141A-SS45RM**).
PQ = Package Quantity

MCS Standard Busbar Modules



- Modules plug directly onto the busbar
- Suitable for use with control plug
- Modules with current ratings supply the load current by means of wire or terminal connections
- Modules can form bigger platforms using the connection clips
- For plugging on 12, 15, 20, 25, 30 mm x 5/10 mm thick busbars

	Description	Rated Thermal Current I_{th} [A]		Width [mm]	Rail(s)	PQ	Cat. No.
	MCS Standard Busbar Module 200 mm high • Universal top hat rail(s) 1M = Metall rail	32		45	2	★	**141A-GS45RR25**
				54		★	**141A-GS54RR25**
		63		54		★	**141A-GS54RR45**
				63		1	**141A-GS63RR45**
		125 (For 140-CMN)		90	1M	1	**141A-GS90M125**
				180			141A-GS180M125
				270			141A-GS270M125
		125	125	180	1M	1	141A-GS180M125H
		Without el. connections (i.e. for Rev. Starters)		45	1	★	**141A-GS45R**
				54		1	**141A-GS54R**
				72		1	**141A-GS72S**
				81		1	141A-GS81S
	MCS Standard Busbar Module 260 mm high • Universal top hat rail(s)	32		45	2	1	141A-GM45RS25
				54			141A-GM54RS25
		63		54			141A-GM54RS45
				63			141A-GM63RS45
		Without el. connections (i.e. for Rev. Starters)		45	1		141A-GM45S
				54			141A-GM54S
				63			141A-GM63S
	MCS Standard Busbar Module with Terminals 200 mm high • Universal top hat rail(s) • For mounting various components		32	45	1	1	**141A-FS45S25**
			63	54			**141A-FS54S63**
				63			141A-FS63S63
				72			141A-FS72S63
				81			**141A-FS81S63**
	MCS Standard Busbar Module with Terminals 260 mm high • Universal top hat rail(s) • For mounting various components		32	45	2		141A-FM45SS25
			63	54			141A-FM54SS63
				63			141A-FM63SS63
				72			141A-FM72SS63
				81			141A-FM81SS63
	Spacer Module For spacing of load feeders by 9 mm e.g. for improved cooling. Including connection clips.					10	**141A-AS9B**

★ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. (Example: **141A-GS45RM**).

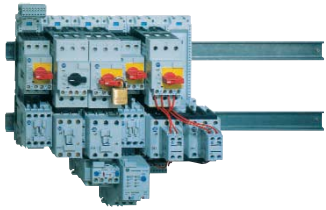
MCS Standard Busbar Modules >100 A

- Busbar modules >100 A are screw mounted onto the busbars
- Sliding nuts for matching the fixing positions of components
- Versions with terminals on top or bottom
- For mounting components with current ratings 100 A (supply and load feeders)
- For plugging on 12, 15, 20, 25, 30 mm x 5/10 mm thick busbars

	Description	Rated Thermal Current I_{th} [A]	Width [mm]	Cat. No.
	Standard Busbar Module with Terminals on Top 222 mm tall With box terminals on top for electrical connection Wire size 70 mm² (2/0 AWG) Universal mounting capability with sliding pocket nuts (M4)	200	108	**141A-FS108V200T**
	Standard Busbar Module with Terminals on Top 320 mm tall With box terminals on top for electrical connection Wire size 120 mm² (250 MCM) Universal mounting capability with sliding pocket nuts (M4)	250	110	141A-FL110V250T
	Standard Busbar Module with Flexible Connecting Wires for electrical connection For use with Bulletin 140U circuit breaker (H-Frame) For use with Bulletin 140M circuit breaker (H-Frame) Meets feeder circuit spacings per UL 508A	125	90	**141A-CUH125T**
		125	90	141A-CUH125B
	Standard Busbar Module with Rear Connecting Studs for electrical connection For use with Bulletin 140U circuit breakers (J-, K- or L-Frame) For use with Bulletin 140M circuit breakers (J-, K- or L-Frame) Meets feeder circuit spacings per UL 508A	250 (J frame)	105	**141A-CUJ250**
		630 (K and L frames)	140	**141A-CUL600**

MCS Mounting Modules

- Modules (carrying the load feeder components) for screw mounting or snapping onto top hat (DIN) rails.
- Control plug optionally (please order separately)
- Three module lengths for 2- and 3-component starters.
- Modules can form bigger platforms using the connection clips (see accessories)
- Modules with PE - terminal for termination of the motor leads incl. PE (for mounting on top hat rails only).



Modules with 2 Rails

	Description	Width [mm]	Cat. No.
	MCS Mounting Module 228 mm high • Universal top hat rail(s) • Preferably for 2-component starters	45	141A-WS45RR
		54	141A-WS54RR
	MCS Mounting Module 228 mm high with PE-Terminal • Universal top hat rail(s) • Preferably for 2-component starters	45	141A-WS45RRP
		54	141A-WS54RRP
	MCS Mounting Module 283 mm high • Universal top hat rail(s) • Preferably for 3-component starters with overload relays 193-ED/EE	45	141A-WM45RR
		54	141A-WM54RR
	MCS Mounting Module 283 mm high with PE-Terminal • Universal top hat rail(s) • Preferably for 3-component starters with overload relays 193-ED/EE	45	141A-WM45RRP
		54	141A-WM54RRP
	MCS Mounting Module 333 mm high • Universal top hat rail(s) • Preferably for 3-component starters with overload relays 193-EC	45	141A-WL45RR
		54	141A-WL54RR
	MCS Mounting Module 333 mm high with PE-Terminal • Universal top hat rail(s) • Preferably for 3-component starters with overload relays 193-EC	45	141A-WL45RRP
		54	141A-WL54RRP

Busbar Components

	Description				PQ	Cat. No.
	NH Fuse Switch Disconnector Connection bottom or top Size 00 for plugging on 5, 10 mm thick and double-T busbars. Sizes 1 and 2 conversion kit 141A-NFAFR5 is required for plugging on 5 mm thick busbars. Size 3 only for plugging on 10 mm and double-T busbars.	Size 00 200 x 106 mm	70 mm²	160 A	1	**141A-NFD160**
		Size 1 243 x 184 mm	M10 120 mm²	250 A	1	**141A-NFD250**
		Size 2 288 x 210 mm	M10 240 mm²	400 A	1	141A-NFD400
		Size 3 300 x 256 mm	M12 240 mm²	630 A	1	141A-NFD630
	Pilot Switch For NH-fuse switch disconnectors Signaling ON/OFF position of lid 250V AC / 5 A 30V DC / 4 A	Size 00…3			1	141A-NFASNFD
	Wedge Clamp Terminal For NH-fuse switch disconnectors Connection accessories	Size 2 21 x 15 mm	120… 240 mm²		1	141A-NFVF2240
		Size 3 25 x 20 mm	150… 300 mm²		1	141A-NFVF3300
	Cover for Cable Lugs For NH fuse switch disconnecor Can be clipped on bottom or top	Size 1			2	141A-NFAC1A
		Size 2			2	141A-NFAC2A
		Size 3			2	141A-NFAC3A

Busbar Components, continued

	Description		PQ	Cat. No.
	Busbar Support 60 mm pole center spacing 3-pole with inside mounting holes (meets feeder circuit spacings per UL508A)	Busbar [mm] 12, 20, 30 x 5 or 12, 20, 30 x 10	10	**141A-TU3**
	Busbar Support 60 mm pole center spacing 3-pole with inside mounting holes (approved for branch circuit applications per UL508)	Busbar [mm] 12…30 x 5 or 12…30 x 10	10	**141A-TR3**
	Busbar Support 60 mm pole center spacing 4-pole with inside mounting holes			141A-TR4
	Busbar Support 1-pole (meets feeder circuit spacings per UL508A) includes PE and N labels			**141A-TR1**
	Busbar Support with terminals 60 mm pole center spacing Terminals for electrical connections 1.5…16 mm² (#16…6 AWG) 3-pole	Busbar [mm] 12…30 x 5 or 12…30 x 10	10	**141A-TR3F16**
	Busbar End Cover Prevents contact with the busbar ends and prevents busbars from sliding. The end cover can easily be clipped on the busbar support. For use with 141A-TR3/-TR4/-TU3/-TR3E	3-pole	10	**141A-TR3E**
		4-pole	10	141A-TR4E
	Double-T Busbar Support For double-T busbars 60 mm spacing (meets feeder circuit spacings per UL 508A)	3-pole	3	141A-T13
		1-pole	10	141A-T11
	Busbar End Cover Prevents contact with the busbar ends and prevents busbars from sliding. The end cover can easily be clipped on the busbar support.		4	141A-T13E
	Compartment Section Fits to 141A-T13 double-T busbar supports Adjusts the installation depth	48 x 2400 mm	1	141A-BST48
		76 x 2400 mm	1	141A-BST76
	Busbar Cover For double-T busbars Length: 1 m; can be cut to length		5	141A-BCT1
	Double-T Busbar 2400 mm length Tin-plated copper busbar	Length: 2400 mm (1250 A)	1	141A-BT11NZ
		Length: 2400 mm (1600 A)	1	141A-BT12NZ
	Panel Busbar Shroud Provides isolation between busbar and panel (required for feeder-circuit applications per UL 508A) 230 x 810 mm	Busbar [mm] All	2	**141A-BCR**

PQ = Package Quantity

Busbar Components, continued

	Description		Busbar [mm]	PQ	Cat. No.
	Supply Module 3-pole 6…50 mm² (10…1/0 AWG) 54 mm wide (meets feeder circuit spacings per UL 508A)		12…30 x 5 or 12…30 x 10 or TT	1	**141A-VN370**
	Supply Module 3-pole 35…120 mm² (2 AWG…250 MCM) 81 mm wide (meets feeder circuit spacings per UL 508A)				**141A-VN3120**
	Supply Module 3-pole 95…185 mm² (3/0 AWG…350 MCM) 135 mm wide				**141A-VN3185**
	Supply Module 3-pole for round conductors 120…300 mm² (250…600 MCM) 135 mm wide				141A-VN3300R
	Supply Module 3-pole for flat conductors up to 32 x 20 mm equivalent to 300 mm² (300…600 MCM) round conductor ampacity 135 mm wide				**141A-VN3300F**
	Supply Module 3-Pole (set of 3 terminals) for round conductors 120…300 mm² (250…600 MCM) 153 mm wide (3 single poles of 51 mm each) (meets feeder circuit spacings per UL 508A) Requires Cat. No. 141A-BK180, 141A-BK228 or 141A-BK250 terminal cover			1	141A-VU3300R
	Supply Module 3-Pole (set of 3 terminals) for flat conductors up to 32x20 mm equivalent to 300 mm² (600 MCM) 153 mm wide (3 single poles of 51 mm each) (meets feeder circuit spacings per UL 508A) Requires Cat. No. 141A-BK180, 141A-BK228 or 141A-BK250 terminal cover				141A-VU3300F
	Single Terminals Single terminals for supplying busbars 2.5…16 mm² (#14…6 AWG)		12…30 x 5	25	**141A-VS116**
			12…30 x 10	25	141A-VS216
	Single Terminals Single terminals for supplying busbars 4…35 mm² (#12…2 AWG)		12…30 x 5	25	**141A-VS135**
			12…30 x 10	25	**141A-VS235**
	Single Terminals Single terminals for supplying busbars 16…70 mm² (#6…2/0 AWG)		12…30 x 5	25	141A-VS170
			12…30 x 10	25	141A-VS270
	Single Terminals Single terminals for supplying busbars 16…120 mm² (#6…250 MCM)		12…30 x 10	25	141A-VS2120
	Profile Terminals For double-T busbars To connect with flat busbars and flexible copper busbars	400…800 mm²	For use up to: 1600 A	3	141A-VS54136F
		500…750 mm²		3	141A-VS55121F
		600…900 mm²		3	141A-VS56421F
		600…1200 mm²	1600 A / 2000 A ★	3	141A-VS56436F
		800…1600 mm²	1600 A / 2500 A ★	3	141A-VS58136F
		1000…2000 mm²	1600 A / 2800 A ★	3	141A-VS510136F

★ >1600 A only for centre feeding

Busbar Components, continued

	Description	Busbar [mm]	PQ	Cat. No.
	Terminal Cover Finger protection when busbars supplied with single terminals. Attaches directly to busbars. Height: 180 mm, Width: 54 mm	12…30 x 5 or 12…30 x 10	1	**141A-BK1**
	Terminal Cover Finger protection when bus bars are supplied by Cat. No. 141A-VU3300_ supply module Attaches directly to bus bars Height: 200 mm Depth: 90 mm	180 x 200 x 90	1	141A-BK180
		228 x 200 x 90		141A-BK228
		250 x 200 x 90		141A-BK250
	Components for Terminal / Busbar Covers of individual length			
	Set of Busbar Shroud Holders	1 left, 1 right side	1	141A-BKH
	Busbar Shroud Profile	1 x 1.1 m		141A-BKC
	Top / Bottom Busbar Shroud Profile	2 x 1.1 m		141A-BKS
	Busbar Connector System distance: 5…10 mm	12…20 x 5/10	12	141A-VC3A
	System distance: 13…20 mm	20…30 x 5/10	6	141A-VC3B
	Busbar Shroud Cover 200 x 1100 mm Covers all three busbars	12…30 x 5 or 12…30 x 10	2	**141A-BCF1**
	Busbar Shroud Holder Two required per section of Busbar Shroud Cover	12…30 x 5 or 12…30 x 10	10	**141A-BCF1H**
	Double-T Busbar Connectors For connection of double-T busbar racks with same dimensions, Width: 95 mm	Double-T	3	141A-VC5F
	Double-T Busbar Connectors For connection of double-T busbar racks with same dimensions, Width: 150 mm			141A-VC5G
	Single Pole Busbar Covers Snap-on profile for single busbars for protection against electric shock. Length: 1 m, can be cut to length.	12…30 x 5	10	**141A-BS5**
		12…30 x 10		**141A-BS10**
	Hat (DIN) Rails — MCS Top Hat Rail (Plastic) Slides onto mounting modules and is then fixed with screws. Has notches for MCS components (prevents movement of components when used with vertical busbar).	45	10	141A-AHR45
		54		141A-AHR54
		63		141A-AHR63
	Control Plug Pull-apart terminal block allows fast and simple disconnection of control wiring. Snaps on the support of the mobile device rail. Composed of plug holder, male and female parts.	8 Pole	1 ★	**141A-APC8**
		10 Pole		**141A-APC10**
		12 Pole		141A-APC12
	Control Plug Holder Suitable for use with 8-, 10-, or 12-pole control plugs.		1	141A-APH
	Connection Clip For joining base of mounting modules.		50	141A-AK

★ May be ordered in package quantities of 10. Add letter **M** to the end of the Cat. No. (Example: **141A-APC8M**).
PQ = Package Quantity

Overload Relays

Bulletin	**193-K**	**193-T1**	**193-ED**	**193-EE**
Type	**Miniature Thermal Overload Relay**	**Bimetallic Overload Relays**	**Electronic Overload Relay, E1 Plus**	
Rated Current (Range)	0.1…12.5 A	0.1…90 A	0.1…45 A	0.1… 800 A
Operating Voltage, Nominal	690V	690V	690V	690V AC (IEC)/ 600V AC (CSA/UL) ★ 1000V AC (IEC)/ 600V AC (CSA/UL) ‡
Overload Type	Bimetallic	Bimetallic	Solid State	Solid State
Trip Class (Fixed)	10A	10A	10	—
Trip Class (Adjustable)	—	—	—	10, 15, 20 or 30
Ambient Compensated	✓	✓	✓	✓
Reset Type	Automatic and Manual	Automatic and Manual	Manual	Manual / Auto-Manual
Adjustment Range	1.5:1	1.5:1	5:1	5:1
Phase Loss	Normal Sensing w/differential mechanism	Normal Sensing w/differential mechanism	Enhanced Sensing	Enhanced Sensing
Trip Contact N.C.	✓	✓	✓	✓
Alarm Contact N.O.	✓	✓	✓	✓
Mounts to Contactor	100-K	100-C	100-C	100-C, 100-D
Product Selection	**See page 1-63**	**See page 1-64**	**See page 1-66**	**See page 1-66**

★ 193-EE_B, 193-EE_D, 193-EE_E
‡ 193-EE_F, 193-EE_G, 193-EE_H

Overload Relays

Bulletin	193-EC1	193-EC2/-EC3	193-EC5	825-P
Type	**E3 Electronic Overload Relay**	**E3 Plus Electronic Overload Relay**	**E3 Plus Voltage Protection and Energy Monitoring Relay**	**Modular Protection System**
Rated Current (Range)	0.4…5000 A			0.5…5000 A
Operating Voltage, Nominal	690V / 1000V ★			690V/1000V
Overload Type	Microprocessor Based			Microprocessor Based
Trip Class (Adjustable)	5…30	5…30	5…30	1…600
Ambient Temperature Compensated	✓	✓	✓	✓
Reset Type	Automatic, Manual and Remote			Automatic, Manual and Remote
Adjustment Range	5:1	5:1	5:1	4:1
Phase Loss	Adjustable Delay	Adjustable Delay	Adjustable Delay	Imbalance Sensing
Phase Reversal	—	—	✓	✓
Ground (Earth) Fault	—	Sensitive	Sensitive	Residual or Sensitive
Overcurrent (Jam) Detection	✓	✓	✓	✓
Stall Detection	✓	✓	✓	✓
Starts/Hour Monitoring	—	—	✓	✓
Underload Detection	✓	✓	✓	✓
Current Imbalance	✓	✓	✓	✓
Short Circuit Protection	—	—	—	✓
PTC Thermistor Monitoring	—	✓	—	✓
RTD Monitoring	—	—	—	12-Channel Optional Scanner
Voltage, Power, and Energy Monitoring	—	—	✓	—
Warning Settings	✓	✓	✓	✓
Trip Contact N.C.	✓	✓	✓	✓
Alarm Contact N.O.	—	—	—	✓
Number of Outputs	1	2	2	3 (Basic)/7 (with I/O Expansion)
Number of Inputs	2	4	6	2 (Basic)/5 (with I/O Expansion)
Number of Analog Outputs	—	—	—	1(with I/O Expansion)
ODVA (DeviceNet) Conformance	✓	✓	✓	✓
Variable Frequency (VFD) Compatible	✓	✓	✓	—
Mounts to Contactor	100-C, 100-D			100-D (825-MCM)
Product Selection	**See page 1-70**	**See page 1-70**	**See page 1-70**	**See page 1-73**

★ 193-EC_F, 193-EC_G, 193-EC_H

MachineAlert Relays

Bulletin	**809S**	**813S**	**813S**	**814S**	**814S**	**817S**
Type	Current Monitoring Relays	Voltage Monitoring Relays		Power Factor Relays	Power (kW) Relays	Thermistor Monitoring Relay
	Single Phase	Single Phase	Three Phase	Three Phase	Three Phase	Three Phase
Operating range	1…10 A AC/DC	2…500V AC/DC	110…690V AC	1…10 A / 380…480V AC 1…10 A / 600…690V AC		—
Control power	24/48V AC/DC	Selfpowered		Selfpowered		24/48V AC/DC
	115/230V AC/DC	Selfpowered		Selfpowered		115V AC 230V AC
Under- and overcurrent protection	✓	—	—	—	—	—
Under- and overvoltage protection	—	✓	✓	—	—	—
Phase loss protection	—	—	✓	—	—	—
Phase imbalance	—	—	✓	—	—	—
Phase reversal	—	—	✓	—	—	—
Under- and over active power (kW) protection	—	—	—	—	✓	—
Overtemperature protection	—	—	—	—	—	✓
Adjustable time delay settings	✓	✓	✓	✓	✓	—
Programmable latching or inhibit at set level	✓	✓	—	✓	✓	—
Changeover contacts (SPDT)	1	1	2	1	1	1
Automatic reset	✓	✓	✓	✓	✓	✓
LED status indicator	✓	✓	✓	✓	✓	✓
Dimensions: W: [mm] H: [mm] D: [mm]	 22.5 80 99.5	 22.5 80 99.5	 45 80 99.5	 45 80 99.5	 45 80 99.5	 22.5 80 99.5
Product Selection	**See page 1-75**					

Miniature Bimetallic Overload Relays 193-K

- Standard Motor Protection for AC and DC Motors
- Overload Protection Trip class 10A
- Auxiliary Switch (1 N.O. and 1 N.C.)
- Phase Loss Sensitivity
- Manual/Auto Reset Button
- Test/Stop Button
- Trip Indicator

Mounts to Contactor	Setting Range [A] ★‡	Max. Current Rating Backup gL Fuse [A] IEC Coordination Type		Cat. No.
		Type 1	Type 2	
100-K05…100-K12	0.10…0.16	35	1	193-KA16
	0.16…0.25	35	1	193-KA25
	0.25…0.40	35	2	**193-KA40**
	0.35…0.50	35	2	**193-KA50**
	0.45…0.63	35	2	**193-KA63**
	0.55…0.80	35	4	**193-KA80**
	0.75…1.0	35	4	**193-KB10**
	0.9…1.3	35	6	**193-KB13**
	1.1…1.6	35	6	**193-KB16**
	1.4…2.0	35	10	**193-KB20**
	1.8…2.5	35	20	**193-KB25**
	2.3…3.2	35	20	**193-KB32**
	2.9…4.0	35	20	**193-KB40**
	3.5…4.8	35	20	**193-KB48**
	4.5…6.3	35	20	**193-KB63**
100-K09…100-K12	5.5…7.5	35	20	**193-KB75**
	7.2…10.0	35	20	**193-KC10**
100-K12	9.0…12.5	35	20	**193-KC12**

★ To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.

‡ For motors with service factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.

Bimetallic Overload Relays 193-T1

- Overload protection trip class 10 / 10A
- Phase loss protection
- Ambient temperature compensation
- Auxiliary contacts (1 N.O. and 1 N.C.)
- Manual/automatic reset mode selectable
- Test function for auxiliary contacts
- Stop button
- Trip Indicator
- Optional remote reset solenoid and external reset accessories

For Use With ★	Setting Range [A] ‡§	Max. Back-up gL/gG fuse [A] 50 kA, 690V AC IEC/EN 60947-4-1 Coordination Type 1	Type 2	Cat. No.
100-C09…100-C23	0.1…0.16	50	—	193-T1AA16
	0.16…0.25	50	—	193-T1AA25
	0.25…0.40	50	2	**193-T1AA40**
	0.35…0.50	50	2	**193-T1AA50**
	0.45…0.63	50	2	**193-T1AA63**
	0.55…0.80	50	4	**193-T1AA80**
	0.75…1.0	50	4	193-T1AB10
	0.90…1.3	50	6	193-T1AB13
	1.1…1.6	50	6	193-T1AB16
	1.4…2.0	50	10	193-T1AB20
	1.8…2.5	50	16	**193-T1AB25**
	2.3…3.2	50	16	**193-T1AB32**
	2.9…4.0	50	16	**193-T1AB40**
	3.5…4.8	50	16	**193-T1AB48**
	4.5…6.3	50	20	**193-T1AB63**
	5.5…7.5	50	25	**193-T1AB75**
	7.2…10	50	25	**193-T1AC10**
	9.0…12.5	50	35	**193-T1AC12**
100-C12…100-C23	11.3…16	50	35	**193-T1AC16**
100-C16…100-C23	15…20	80	40	**193-T1AC20**
	17.5…21.5	80	50	**193-T1AC21**
100-C23	21…25	80	50	**193-T1AC25**
100-C30…100-C37	15…20	80	40	193-T1BC20
	17.5…21.5	80	50	193-T1BC21
	21…25	80	50	**193-T1BC25**
	24.5…30	100	63	**193-T1BC30**
	29…36	125	63	**193-T1BC36**
100-C37	33…38	125	63	**193-T1BC38**
100-C43	17…25	100	50	193-T1CC25
	24.5…36	125	80	193-T1CC36
	35…47	160	100	193-T1CC47
100-C60…100-C97	35…47	160	100	193-T1DC47
	45…60	200	125	193-T1DC60
100-C72…100-C97	58…75	200	125	193-T1DC75
100-C85…100-C97	72…90	250	160	193-T1DC90

Thermal Overload Relays, continued

For Use With ★	Setting Range [A] ‡§	Max. Back-up gL/gG fuse [A] 50 kA, 690V AC IEC/EN 60947-4-1 Coordination		Cat. No.
		Type 1	Type 2	
Separate mounting required (Panel-mounted device)	35…47	160	100	193-T1DC47P
	45…60	200	125	193-T1DC60P
	58…75	200	125	193-T1DC75P
	72…90	250	160	193-T1DC90P

★ Bulletin 193-T1 overload relays shall not be used with conventional DC controlled contactors. Use electronic controlled DC versions.

‡ To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.

§ For motors with service factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.

Add-On Modules

	Description	For Use With	PQ	Cat. No.
	DIN Rail/Panel Mounting Adapter For separate mounting of overload relays Snaps on to 35 mm top hat rail	193-T1AA, 193-T1AB, 193-T1AC, 193-T1BC	1	**193-T1APM**
	Screw Adapter For screw fixing of the 193-T1APM panel adapter (1 required per adapter)	193-T1APM	10 ★	140M-C-N45
	Remote Reset Solenoid For remote reset of 193-K and 193-T1 overload relays	193-K, 193-T1 (not for 193-T1DC_P)	1	193-T1R⊗
	External Reset Button For enclosed, through-the-door reset applications. Metal construction, IP66, non-illuminated. Refer to the 800F selection information for additional types.	All	1	**800FM-R611**
	Reset Rod Length 142 mm, adjustable range 141…159 mm	All	1	**800F-ATR08**
	Reset Adapter Expands the reset target area when using an external reset	193-K, 193-T1 (not for 193-T1DC_P)	1	193-RA3

★ Must be ordered in multiples of package quantity.

PQ = Package Quantity

⊗ Coil Voltage Codes for Remote Reset Solenoid

[V]	24	48	110	120	125	220…240
50 Hz	—	—	**D**	—	—	—
60 Hz	—	—	—	**D**	—	—
50/60 Hz	**KJ**	KY	—	—	—	**KF**
DC	**ZJ**	ZY	ZD	—	ZS	—

Electronic Overload Relays E1 Plus - 193-ED, 193-EE

- Self-Powered
- Fast Phase Loss Protection
- Wide Adjustment Range (5:1)
- Insert-Molded Power Connections
- 1 N.O. and 1 N.C. Isolated Auxiliary Contacts (B600, AC-15 Rated)
- Low Energy Consumption (150 mW)
- Ambient Temperature Compensation
- Visible Trip Indication
- Optional accessories for expanded functionality

Standard version

Pass-through version

Description	Mounts to Contactor	Adjustment Range [A]	Cat. No.
Three-Phase Devices 193-ED			
• 0.1…45 A Current Range • Fixed Trip Class 10 • Manual Reset	100-C09…100-C23	0.1…0.5	**193-ED1AB**
		0.2…1.0	**193-ED1BB**
		1.0…5.0	**193-ED1CB**
		3.2…16	**193-ED1DB**
		5.4…27	**193-ED1EB**
	100-C30…100-C43	5.4…27	193-ED1ED
		9…45	**193-ED1FD**
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	**193-ED1CP**
		3.2…16	**193-ED1DP**
		5.4…27	193-ED1EP
Three-Phase Devices 193-EE			
• 0.1…800 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	100-C09…100-C23	0.1…0.5	**193-EEAB**
		0.2…1.0	**193-EEBB**
		1.0…5.0	**193-EECB**
		3.2…16	**193-EEDB**
		5.4…27	**193-EEEB**
	100-C30…100-C43	5.4…27	**193-EEED**
		9…45	**193-EEFD**
	100-C60…100-C97	5.4…27	193-EEEE
		9…45	193-EEFE
		18…90	**193-EEGE**
		60…120	193-EEVE
	100-D115…100-D180	60…120 ★	193-EEVF
		30…150 ★	**193-EEHF**
		40…200 ★	**193-EEJF**
	100-D210…100-D420	40…200 ★	193-EEJG
		60…300 ★	**193-EEKG**
	100-D210…100-D420	100…500 ★	193-EELG
	100-D630…100-D860	120…600 ★	193-EEMH
	100-D630…100-D860	160…800 ★	193-EENH
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	**193-EECP**
		3.2…16	193-EEDP
		5.4…27	193-EEEP

★ Rated operating voltage IEC: 1000V AC

Electronic Overload Relays E1 Plus - 193-ED, 193-EE, continued

Description	CT Ratio	Adjustment Range [A]	Cat. No.
Three-Phase Devices 193-EE_Z for use with external CT's (193-CBCT_)			
• 30…800 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset • Require one external CT per phase (not supplied) (Rating for protecting relaying, Secondary current 5 A Secondary load 0.1 VA (overload relay only) Accuracy >= 2 % over operating range) • Require the use of the panel adapter 193-EPB	150:5	30…150	193-EEHZ
	200:5	40…200	193-EEJZ
	300:5	60…300	193-EEKZ
	400:5	80…400	193-EEWZ
	500:5	100…500	193-EELZ
	600:5	120…600	193-EEMZ
	800:5	160…800	193-EENZ

Description	Mounts to Contactor	Adjustment Range [A]	Cat. No.
Single-Phase Devices 193-EE			
• 1…90 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	100-C09…100-C23	1.0…5.0	**193S-EEPB**
		3.2…16	**193S-EERB**
		5.4…27	193S-EESB
	100-C30…100-C43	9…45	193S-EETD
	100-C60…100-C97	18…90	193S-EEUE
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	193S-EEPP
		3.2…16	193S-EERP
		5.4…27	193S-EESP

Accessories for Overload Relays

	Description	For Use With	PQ	Cat. No.
	DIN Rail/Panel Adapter For separate mounting – can be mounted to top-hat rail EN 50 022-35	193-ED1_B, 193-EE_B, 193S-EE_B, 193-EE_Z	1	**193-EPB**
		193-ED1_D, 193-EE_D, 193S-EE_D		**193-EPD**
		193-EE_E, 193S-EE_E		**193-EPE**
	Current Adjustment Shield Prevents inadvertent adjustment of the current setting. Must be ordered in multiples of package quantities.	193-ED (all), 193-EE (all)	10	193-BC8
	External Reset Adapter For enclosed, through-the-door reset applications. Use with external reset button.	193-ED (all) 193-EE_B, 193-EE_D, 193-EE_E, 193-EE_P, 193-EE_Z	1	193-ERA
	External Reset Button For enclosed, through-the-door reset applications. Metal construction, IP66, non-illuminated. Refer to the 800F selection information for additional types.	All	1	**800FM-R611**
	Reset Rod Length 142 mm, adjustable range 141…159 mm	All	1	**800F-ATR08**

PQ = Package Quantity

Accessories for Overload Relays, Continued

	Description	For Use With	Cat. No.
	E1 Plus DeviceNet and Protection Module Communicates motor diagnostic data via DeviceNet, includes additional I/O, and provides enhanced motor protection options.‡	193-EE (all), 193S-EE (all)	**193-EDN**
	E1 Plus EtherNet/IP and Protection Module Communicates motor diagnostic data via EtherNet/IP, includes additional I/O, and provides enhanced motor protection options.‡		**193-ETN**
	E1 Plus PROFIBUS and Protection Module Communicates motor diagnostic data via PROFIBUS, includes additional I/O, and provides enhanced motor protection options.‡		193-EPRB
	E1 Plus Ground Fault/Jam Module Provides adjustable 20 mA…5 A ground fault and fixed jam protection. The module also provides an input to allow remote reset of a trip.★‡		193-EGJ
	E1 Plus Ground Fault Module Provides adjustable 20 mA…5 A ground fault protection. The module also provides an input to allow remote reset of a trip.★‡		193-EGF
	E1 Plus Jam Protection Module Provides Jam protection with adjustable trip level and trip delay setting. The module also provides an input to allow remote reset of a trip.‡		**193-EJM**
	E1 Plus PTC Module Provides terminals for connection up to six PTC thermistor sensors. Sensors react to actual temperature and therefore provide enhanced motor protection. Module also provides an input to allow remote reset of a trip.‡		193-EPT
	E1 Plus Remote Reset Module Provides an input to allow remote reset of a trip.‡		**193-ERR**
	E1 Plus Remote Indicator Display Displays the status of an E1 Plus from the front of a panel and features a reset button. Mounts in a standard 22 mm push button cutout.‡	193-EGF, 193-EJM, 193-EGJ, 193-PTC, 193-ERR (Ser. B or later)	193-ERID
	Replacement Connectors for Cat. No. 193-ERID	193-ERID	193-NCRID

★ Requires external ground fault sensor, Cat. No. 193-CBCT_.
‡ Only one module may be added.

Accessories for Overload Relays, Continued

	Description		For Use With	Cat. No.
	Core Balanced Ground Fault Sensor • Required when using either an E1 Plus Ground Fault Protection or Ground Fault/Jam Module • Required for ground fault protection with the Cat. No. 193-EC3 overload relay	20 mm (0.79 in.)	100-C09…100-C37	193-CBCT1
		40 mm (1.57 in.)	100-C09…100-C97	193-CBCT2
		63 mm (2.5 in.)	100-C09…100-C97, 100-D115…100-D180	193-CBCT3
		82 mm (3.25 in.)	100-C09…100-C97, 100-D115…100-D420	193-CBCT4
	DeviceNet Configuration Terminal Used to interface with objects on a DeviceNet network. Includes 1 m communications cable (193-CB1).		DeviceNet	**193-DNCT**
	1 meter communication cable, color-coded bare leads		193-DNCT	193-CB1
	1 meter communication cable, microconnector (male)			193-CM1
	Panel Mount Adapter/Door Mount Bezel Kit			193-DNCT-BZ1
	Remote Reset Solenoid	24V AC, 50/60 Hz	E1 Plus (Series C and later)	193-EMRJ
		110/120V AC, 50/60 Hz		193-EMRD
		220/240V AC, 50/60 Hz		193-EMRA
		24V DC		193-EMRZ24
		48V DC		193-EMRZ48
		115V DC		193-EMRZ01

	Description	For Use With	Cat. No.
	Terminal Lugs • Set of two • Protection class IP2X per IEC 60529 and DIN 40 050	100-D115, 100-D140, 100-D180, 100-D115E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
		100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Terminal Covers • Protection class IP20 per IEC 60529 and DIN 40 050 • For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D115…100-D180, 193-EC_F, 193-EE_F	**100-DTC180**
		100-D210...100-D420, 193-EC_G, 193-EE_G	**100-DTC420**
		100-D630…100-D860, 193-EC_H, 193-EE_H	**100-DTC860**
		100-D630…100-D860, 193-EC_H, 193-EE_H	100-DTCS860
	Terminal Lugs (UL/CSA), Copper Frame Set of three	100-D115, 100-D140, 100-D180, 193-EC_F, 193-EE_F	100-DL180
		100-D210…100-D420, 193-EC_G, 193-EE_G	100-DL420
		100-D630, 100-D860, 193-EC_H, 193-EE_H	100-DL630
		100-D630, 100-D860, 193-EC_H, 193-EE_H	100-DL860

Note: For labeling materials, see page 1-37.

E3 and E3 Plus Electronic Overload and Current Monitor Relays

- DeviceNet™ communication integrated
- IEC/NEMA configurations
- True RMS current sensing
- Single-/three-phase
- LED indicators
- Test/reset button
- Adjustable trip class (5…30)
- Motor Diagnostics

Bulletin	No. Inputs	No. Outputs	PM Diagnostics	PTC Thermistor	DeviceLogix	Ground Fault
193-EC1	2	1	✓	—	—	—
193-EC2	4	2	✓	✓	✓	Internal (1…5 A)
193-EC3	4	2	✓	✓	✓	External ‡ (20 mA…5 A)
193-EC5	6	2	✓	—	✓	External ‡ (20 mA…5 A)

‡ External ground fault sensor, Cat. No. 193-CBCT_, required

Electronic Motor Protection Relays 193-EC1 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]		Cat. No.
100-C09…100-C23	0.4…2		193-EC1PB
	1…5		**193-EC1AB**
	3…15		**193-EC1BB**
	5…25		193-EC1CB
100-C30…100-C43	1…5		193-EC1AD
	3…15		193-EC1BD
	5…25		193-EC1CD
	9…45		193-EC1DD
100-C60…100-C97	9…45		193-EC1DE
	18…90		193-EC1EE
100-D115…100-D180	28…140	★	193-EC1FF
	42…210	★	193-EC1GF
100-D210…100-D420	42…210	★	193-EC1GG
	60…302	★	193-EC1HG
	84…420	★	193-EC1JG
100-D630…100-D860	125…630	★	193-EC1KH
	172…860	★	193-EC1LH

★ Does not include terminal lugs.
Rated operating voltage IEC: 1000V AC.

Electronic Motor Protection Relay 193-EC2 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]	Cat. No.
100-C09…100-C23	0.4…2	**193-EC2PB**
	1…5	**193-EC2AB**
	3…15	**193-EC2BB**
	5…25	**193-EC2CB**
100-C30…100-C43	1…5	193-EC2AD
	3…15	193-EC2BD
	5…25	**193-EC2CD**
	9…45	**193-EC2DD**
100-C60…100-C97	9…45	193-EC2DE
	18…90	**193-EC2EE**

Electronic Overload Relays 193-EC3 / -EC5 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]		Bul. 193-EC3 Cat. No.	Bul. 193-EC5 Cat. No.
100-C09…100-C23	0.4…2.0		**193-EC3PB**	193-EC5PB
	1…5		193-EC3AB	193-EC5AB
	3…15		**193-EC3BB**	193-EC5BB
	5…25		193-EC3CB	193-EC5CB
100-C30…100-C43	5…25		193-EC3CD	193-EC5CD
	9…45		193-EC3DD	193-EC5DD
100-C60…100-C97	9…45		193-EC3DE	193-EC5DE
	18…90		193-EC3EE	193-EC5EE
100-D115…100-D180	28…140	★	193-EC3FF	193-EC5FF
	42…210	★	193-EC3GF	193-EC5GF
100-D210…100-D420	42…210	★	193-EC3GG	193-EC5GG
	60…302	★	193-EC3HG	193-EC5HG
	84…420	★	193-EC3JG	193-EC5JG
100-D630…100-D860	125…630	★	193-EC3KH	193-EC5KH
	172…860	★	193-EC3LH	193-EC5LH

★ Does not include terminal lugs.
Rated operating voltage IEC: 1000V AC.

Panel Mount Devices for use with External Current Transformers

For Use With	Adjustment Range [A] ♣	Cat. No.
193-ECPM2 DIN Rail/Panel Adapter (Order panel adapter 193-ECPM2 separately)	9…5000	193-EC1ZZ
		193-EC3ZZ
		193-EC5ZZ

♣ Current transformers supplied by customer. Refer to CT chart for proper current transformer selection.

CT Ratio to FLA Setting Range Correlation

CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]
50:5	9…45	300:5	60…302	1200:5	240…1215
100:5	18…90	500:5	84…420	2500:5	450…2250
150:5	28…140	600:5	125…630	5000:5	1000…5000
200:5	42…210	800:5	172…860	—	—

Add-on Accessories

	Description		For Use With	Cat. No.
	DeviceNet Configuration Terminal Used to interface with objects on a DeviceNet network. Includes 1 m communications cable (193-CB1). 193-CB1 cable included.		DeviceNet	**193-DNCT**
	1 meter communication cable, color-coded bare leads		193-DNCT	193-CB1
	1 meter communication cable, microconnector (male) M12		193-DNCT	193-CM1
	Panel Mount Adapter/Door Mount Bezel Kit for door mounting		193-DNCT	193-DNCT-BZ1
	DIN Rail/Panel Adapter ★		193-EC__B	**193-ECPM1**
			193-EC_D, 193-EC_ZZ, 193-EC_ZZ	**193-ECPM2**
			193-EC__E	**193-ECPM3**
	AC Input Interface Module rated 110/120V AC, 50/60 Hz		193-EC — all 592-EC — all	193-EIMD
	Core Balanced Ground Fault Sensor • Required when using either an E1 Plus Ground Fault Protection or Ground Fault/Jam Module • Required for ground fault protection with the Cat. No. 193-EC3 overload relay	Max. current 45 A Hole diameter 20 mm	100-C09…100-C37	193-CBCT1
		Max. current 90 A Hole diameter 40 mm	100-C09…100-C97	193-CBCT2
		Max. current 180 A Hole diameter 63 mm	100-C09…100-C97, 100-D115…100-D180	193-CBCT3
		Max. current 420 A Hole diameter 82 mm	100-C09…100-C97, 100-D115…100-D420	193-CBCT4
	Terminal Lugs • Set of two • Protection class IP2X per IEC 60529 and DIN 40 050		100-D115, 100-D140, 100-D180, 100-D115E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
			100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Terminal Covers • Protection class IP20 per IEC 60529 and DIN 40 050 • For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies		100-D115…100-D180, 193-EC_F, 193-EE_F	**100-DTC180**
			100-D210...100-D420, 193-EC_G, 193-EE_G	**100-DTC420**
			100-D630…100-D860, 193-EC_H, 193-EE_H	**100-DTC860**
	Phase Barriers Set of 4		100-D630…D860, 193-EC_H, 193-EE_H	100-DPB860

★ The electronic motor protection relay can be mounted separately to top-hat rail EN 50 02-35.

Note: For labeling materials, see page 1-37.

Modular Protection System 825-P

- 0.5…5000 A current range
- Suitable for low- and medium-voltage applications
- Modular design with pluggable options
  - Voltage input card
  - Expansion I/O cards
  - Communications cards, including DeviceNet
  - RTD scanner module
- Comprehensive protection functions
- Built-in keypad and backlit 2-Line LCD
- Test / Reset button
- Status LEDs
- 3 output relays
- 2 configurable inputs

	Description			Cat. No.
	Basic Unit Note: The minimum requirements for a complete basic system are one basic unit and one converter module.	120…240V AC/DC		**825-PD**
	User Manual Ships separate from Basic Unit. Please consult your local sales office.	825-UM004…		
	Converter Module	0.5…2.5 A		**825-MCM2**
		2.5…20 A		**825-MCM20**
		20…180 A		**825-MCM180**
		160…630 A		**825-MCM630N**
	Core Balance Ground Fault Sensor	100:1		**825-CBCT**
	RTD Scanner Module 12 RTD input channels with individual programming for 10 Ω copper, 100 Ω nickel, 120 Ω nickel, or 100 Ω platinum. Fiber optic connection to Basic Unit. Class I, Division 2, Group T48.. Use an up to 500m long Simplex 62.5/125µm fiber optic cable ST/ST (customer suplied).	120 / 240V AC		**825-PR12D**
	Voltage Input Card Monitoring of V_A, V_B, V_C, and V_N	300V AC Line to Neutral Max.	★	**825-PVS**
	Expansion I/O Card (3) Inputs (4) Output relays (1) 4…20 mA analog output	120V AC Rated Inputs	★	825-PIOD
		24V DC Rated Inputs		**825-PIOR**
	DeviceNet Communication Card DeviceLogix technology, Node address selection switches, ODVA conformance tested.		★	825-PDN
	DeviceNet User Manual Please consult your local sales office.	825-UM005…		
	Modbus RTU Communication Card	—	★	825-PMB

★ Please consult your local sales office for factory configurated devices with option cards.

Accessories

	Description		Cat. No.
	M8 connections Set of three 4 x 16 x 102 mm (1/8 x 5/8 x 4-1/64 in.) (125 A max.) Universally applicable Weight: 230 g		825-MVM
	M8 connections Set of three 4 x 20 x 117 mm (1/8 x 25/32 x 4-39/64 in.) (180 A max.) Universally applicable		825-MVM2
	M6 lower connections Set of three For mounting on Bul. 100-D105 and 100-D110 contactors with conventional coil		825-MVS
	M8 lower connections Set of three For mounting on Bul. 100-D140, 100-D180 conventional and Bul. 100-D105E…100-D180E contactors with electronic coil		**825-MVS2**
	Terminal Shields • Set of two • Protection class IP10 per IEC 60529 and DIN 40 050 • For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D115	**100-DTS110**
		100-D115…100-D180, 193-FE	**100-DTS180**
		100-D210...100-D420, 193-FE	**100-DTS420**
	Terminal Lugs • Set of two • Protection class IP2X per IEC 60529 and DIN 40 050	100-D115	**100-DTB110**
		100-D115, 100-D140, 100-D180, 100-D115E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
		100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Thermal Utilization Meter	For display of percent thermal capacity utilized Requires the use of an Expansion I/O Card	825-MTUM
	Connection Cable (Replacement) Bul. 825-P to Bul. 825-MCM Connection		825-MCA

MachineAlert Relays 809S, 813S, 814S, 817S

- Single- and Three-Phase Voltage Monitor Relay
- Single-Phase Current Monitor Relay
- Thermistor Monitor Relay
- Power (kW) Monitor Relay
- Three-Phase Power Factor (PF) Monitor Relay

The MachineAlert Relays family of dedicated function electronic motor protection relays offers state-of-the-art supplementary protective functions that are easily added and applied to motor control circuits. MachineAlert Relays are an economical choice for protecting equipment investments and minimizing production downtime. To meet specific application requirements, a full range of products allows selective addition of protective enhancing functions for both motors and equipment.

Motor Protection Relay Type		Description	Cat. No.
	Bulletin 809S Current Monitoring Relays	1…10 A AC/DC (1-phase); 24/48V AC/DC control power	809S-C1-10A-48
		1…10 A AC/DC (1-phase); 115/230V AC control power	809S-C1-10A-230
	Bulletin 813S Voltage Monitoring Relays	Single-phase voltage monitoring relay, 2…500V AC/DC; 24/48V AC/DC control power	813S-V1-500V-48
		Single-phase voltage monitoring relay, 2…500V AC/DC; 115/230V AC control power	813S-V1-500V-230
		Three-phase voltage monitoring relay, 110…115V AC	813S-V3-110V
		Three-phase voltage monitoring relay, 208…240V AC	813S-V3-230V
		Three-phase voltage monitoring relay, 380…415V AC	813S-V3-400V
		Three-phase voltage monitoring relay, 440…480V AC	813S-V3-480V
		Three-phase voltage monitoring relay, 600…690V AC	813S-V3-690V
	Bulletin 814S Power Monitoring Relays	Three-phase power (kW) monitoring relay, 380…480V AC & 1…10 A AC	814S-W3-480V-10A
		Three-phase power (kW) monitoring relay, 600…690V AC & 1…10 A AC	814S-W3-690V-10A
		Three-phase power factor monitoring relay, 380…480V AC & 1…10 A AC	814S-PF3-480V-10A
		Three-phase power factor monitoring relay, 600…690V AC & 1…10 A AC	814S-PF3-690V-10A
	Bulletin 817S Thermistor Monitoring Relay	Thermistor monitoring relay, 24/48V AC/DC control power	**817S-PTC-48**
		Thermistor monitoring relay, 115V AC control power	817S-PTC-115
		Thermistor monitoring relay, 230V AC control power	**817S-PTC-230**

Bulletin 280/281, 283, 284

ArmorStart Distributed Motor Controllers

Product Line Overview

Product type	**ArmorStart**	**ArmorStart Safety** (System requires use of 1732DS Safety I/O Block)
Features	• On-machine starting solution • Direct on line, Reversing, Softstarter and VFD • Quick disconnect connections for I/O, communications and motor • Optional quick disconnect for power and control connections • LED status Indication • Optional Hand/Off/Auto Keypad	• On-machine starting solution • Direct on line, Reversing and VFD • Quick disconnect connections for I/O, communications and motor • Optional quick disconnect for power and control connections • LED status Indication • Optional Hand/Off/Auto Keypad
Connectivity	• Ethernet Dual port with Device Level Ring capability • DeviceNet with DeviceLogix • ArmorPoint Connectivity	• DeviceNet with DeviceLogix
Power rating (@ 400V AC)	DOL/Rev: 7.5 kW Softstarter: 5.5 kW VFD: 3 kW	DOL/Rev: 7.5 kW VFD: 3 kW
Control voltage	24 V DC / 120V AC / 240V AC	24V DC
Enclosure rating	IP67 / IP69K	IP67
Input and Outputs	4 Inputs / 2 Outputs	4 Inputs / 2 Outputs

For complete product information, see catalog A117 or on-line selection tools at www.ab.com

Smart Motor Controllers

Bulletin	150-C	150-F
Type	**SMC-3 Controller**	**SMC Flex Controller**
Current Range	200…600V 1…480 A / 831 A	200…600V / 690V ‡ 1…1250 A / 1600 A
Soft Start	✓	✓
Kickstart	✓	✓
Current Limit	✓	✓
Dual Ramp Start	—	✓★
Full Voltage	—	✓
Soft Stop	✓	✓
Pump Control	—	✓★
Preset Slow Speed	—	✓★
Linear Speed	—	✓★
SMB Smart Motor Braking	—	✓★
Accu-Stop	—	✓★
Slow Speed with Braking	—	✓★
Integrated Bypass Contacts	✓	✓
Integrated Motor Protection	✓	✓
Communication	—	✓
Metering	—	✓
Keypad Programming/ LCD Display	—	✓
Standards Compliance: CE Marked per Low Voltage Directive 73/23/EEC, 93/68/EEC	✓	✓
CSA Certified (File No. LR 1234),	✓	✓
UL Listed (File No. E96956)	✓	✓
Product Selection	**See page 1-78**	**See page 1-80**

★ Depending on selected option
‡ for 108…1250 A types

Smart Motor Controllers SMC-3

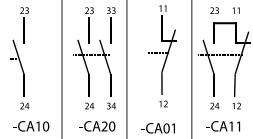
- 1…480/831 A Range
- Soft Start
- Current Limit Start
- Selectable Kick Start
- Selectable Soft Stop
- Built-In Overload Protection
- Built-In SCR Bypass
- For in-line or inside-the-delta configurations

Up to 480V AC

Line Connection		Delta Connection			
Current Rating ★‡	Motor Power @ 400V AC §	Current Rating ★‡	Motor Power @ 400V AC §	100…240V 50/60 Hz Control	24V AC/DC Control
[A]	[kW]	[A]	[kW]	Cat. No.	Cat. No.
1…3	1.1	1.7…5.1	0.55…2.2	**150-C3NBD**	**150-C3NBR**
3…9	4	5.1…16	2.2…7.5	**150-C9NBD**	**150-C9NBR**
5.3…16	7.5	9.1…27.6	4…11	**150-C16NBD**	**150-C16NBR**
6.3…19	7.5	10.9…32.8	4…15	**150-C19NBD**	**150-C19NBR**
9.2…27.7	11	14.3…43	5.5…22	**150-C25NBD**	**150-C25NBR**
10…30	15	17.3…52	7.5…22	**150-C30NBD**	**150-C30NBR**
12.3…37	18.5	21…64	7.5…30	**150-C37NBD**	**150-C37NBR**
14.3…43	22	25…74	11…37	**150-C43NBD**	**150-C43NBR**
20…60	30	34.6…104	15…55	**150-C60NBD**	**150-C60NBR**
28.3…85	45	50…147	22…75	**150-C85NBD**	**150-C85NBR**
27…108	55	47…187	90	**150-C108NBD**	**150-C108NBR**
34…135	75	59…234	132	**150-C135NBD**	**150-C135NBR**
67…201	95…110	116…348	160	**150-C201NBD**	150-C201NBR
84…251	95…132	145…435	250	150-C251NBD	150-C251NBR
106…317	95…160	183…549	315	150-C317NBD	150-C317NBR
120…361	110…200	208…625	355	150-C361NBD	150-C361NBR
160…480	160…250	277…831	450	150-C480NBD	150-C480NBR

★ Motor FLA and Motor Running Current must fall within the running current range of the device to operate properly.
‡ From series letter "B", these units can be used in the inside the delta wiring with a current range 1.73 x higher
§ Calculated using 350 % over current during starting.

Accessories for SMC-3

	Description	N.O.	N.C.	Connection Diagram	Cat. No.
	Auxiliary Contact Blocks for side mounting with sequence terminal designations 1- and 2-pole Quick and easy mounting without tools One block per device only	1	0		**150-CA10**
		2	0		**150-CA20**
		0	1		**150-CA01**
		1	1		**150-CA11**

	Description	For Use With	Cat. No.
	Fan Field installed	150-C3…37 ★	**150-CF64**
	Connecting modules to 140-M Electrical interconnection between SMC-3 and 140-M. Motor protector and SMC must be mounted separately.	Connects 140-M-C to 150-C3…25	150-CC25
		Connects 140-M-D to 150-C3…25	150-CD25
		Connects 140-M-F to 150-C3…37	150-CF45
	Connecting modules to 100-C Electrical interconnection between SMC-3 and 100-C. Contactor and SMC must be mounted separately.	Connects 100-C09…23 to 150-C3…19	150-CI23
		Connects 100-C30…37 to 150-C3…37	150-CI37
	480V Protective Module	150-C3…37NB	**150-C84**
		150-C43…85NB (line and/or load)	**150-C84P**
	600V Protective Module	150-C3…37NC	150-C86
		150-C43…85NC (line and/or load)	150-C86P

IEC Terminal Covers ‡

	IEC line or load terminal covers for 108 and 135 A devices. Dead front protection	**150-TC1**
	IEC line or load terminal covers for 201…251 A devices. Dead front protection	**150-TC2**
	IEC line or load terminal covers for 317…480 A devices. Dead front protection	**150-TC3**

★ For devices above this range, the fan is shipped with the device as standard.

‡ One terminal cover is shipped as standard with the SMC-3 controllers from 108…480 A.

Smart Motor Controllers SMC-Flex

- 1…1250/1600 A Range
- Soft Start
- Current Limit Start
- Dual Ramp
- Full Voltage
- Linear Speed Acceleration
- Preset Slow Speed
- Soft Stop

Options
- Pump Control
- Braking Control

Up to 480V AC

Line Connection ★‡§		Delta Connection ★‡§		100…240V AC 50/60 Hz Control ♣	
				Without Option	With Pump Control Option
Motor Current [A]	400V [kW]	Motor Current [A]	400V [kW]	Cat. No.	Cat. No.
1…5	2.2	1.7…8.7	4	150-F5NBD	150-F5NBDB
5...25	11	8.7…43	22	**150-F25NBD**	**150-F25NBDB**
8.6...43	22	14.9…74	37	**150-F43NBD**	**150-F43NBDB**
12...60	30	20.8…104	55	**150-F60NBD**	**150-F60NBDB**
17...85	45	29.4…147	75	**150-F85NBD**	**150-F85NBDB**
27…108	55	47…187	90	**150-F108NBD**	**150-F108NBDB**
34…135	75	59…234	132	**150-F135NBD**	**150-F135NBDB**
67…201	110	116…348	160	**150-F201NBD**	**150-F201NBDB**
84…251	132	145…435	250	**150-F251NBD**	**150-F251NBDB**
106…317	160	183…549	315	**150-F317NBD**	**150-F317NBDB**
120…361	200	208…625	355	**150-F361NBD**	**150-F361NBDB**
160…480	250	277…831	450	**150-F480NBD**	**150-F480NBDB**
208…625	355	283…850	500	150-F625NBA	150-F625NBAB
260…780	450	300…900	500	150-F780NBA	150-F780NBAB
323…970	560	400…1200	710	150-F970NBA	150-F970NBAB
416…1250	710	533…1600	900	150-F1250NBA	150-F1250NBAB

★ Controllers rated 108 A and greater are not equipped with line and load terminal lugs.
‡ Motor FLA and motor running current must fall within the running current range of the device to operate properly.
§ Utilization category: **5…480 A:** AC-53b: 3-50: 1750 / **625…1250 A:** AC-53b: 3.0-50: 3550
♣ Reduced control voltage range for devices from 625…1250 A. See configuration table in section "***b***".

Optional Configurations

150-F108N B D B
a b c

a

Options	Voltage Range
B	Up to 480V AC
C	Up to 600V AC
Z	Up to 690V AC (108…1250 A types only)

b

Options	Control Voltage
D	100…240V AC 50/60 Hz (5…480 A units)
R	24 V AC/DC (5…480 A units)
E	110/120 V AC (625…1250 A units)
A	230/240 V AC (625…1250 A units)

c

Options	Description
Blank	**Standard**
B	**Pump Control** Provides smooth motor acceleration and deceleration, reducing surges caused by the starting and stopping of centrifugal pumps. Starting time is adjustable from 0…30 seconds, and stopping time is adjustable from 0…120 seconds.
D	**Braking Control** Provides Smart Motor Braking (SMB), Accu-Stop, and Slow Speed with Braking. Prices on request.

Accessories for SMC-Flex

Description			Cat. No.
Protective Modules ★			
	480V Protective Module	5…85 A	**150-F84**
		90...180 A	**150-F84L**
	600V Protective Module	5…85 A	150-F86
		108…1250 A	150-F86L
IEC Terminal Covers ‡			
	IEC line or load terminal covers for 108 and 135 A devices. Dead front protection		**150-TC1**
	IEC line or load terminal covers for 201…251 A devices. Dead front protection		**150-TC2**
	IEC line or load terminal covers for 317…480 A devices. Dead front protection		**150-TC3**
Human Interface Modules			
	Hand Held Human Interface Modules	LCD Display, Full Numeric Keypad §	**20-HIM-A3**
		LCD Display, Programmer Only §	**20-HIM-A5**
		Enhanced, LCD Display, Full Numeric Keypad §	**20-HIM-A6**
	Door Mounted Human Interface Modules	Remote (Panel Mount) LCD Display, Full Numeric Keypad	**20-HIM-C3S**
		Remote (Panel Mount) LCD Display, Programmer Only	20-HIM-C5S
		Enhanced, Remote (Panel Mount) LCD Display, Full Numeric Keypad	**20-HIM-C6S**
	Human Interface Module Interface Cables	PowerFlex HIM Interface Cable, 1 m (39 in)	**20-HIM-H10**
Communication Modules			
	Communication Modules (IP30/Type 1)	RS485 DF1 Communication Adapter	20-COMM-S
		PROFIBUS™ DP Communication Adapter	**20-COMM-P**
		HVAC Communication Adapter	20-COMM-H
		ControlNet™ Communication Adapter (Fiber)	20-COMM-Q
		ControlNet™ Communication Adapter (Coax)	**20-COMM-C**
		DeviceNet™ Communication Adapter	**20-COMM-D**
		EtherNet/IP™ Communication Adapter	**20-COMM-E**
Core Balance Transformer			
	Core Balance Ground Fault Sensor	100:1	**825-CBCT**

★ The same protective module mounts on the line or load side of the SMC-Flex. For applications requiring both line and load side protection, two protective modules must be ordered.
‡ One terminal cover is shipped as standard with the SMC-Flex controllers from 108…480 A.
§ Requires a 20-HIM-H10 cable to connect to the SMC-Flex.

PowerFlex 4, 4M, 40

Bulletin	22A…	22F…	22B…	22D…	22C…
Type	**PowerFlex 4**	**PowerFlex 4M**	**PowerFlex 40**	**PowerFlex 40P**	**PowerFlex 400**
Ratings 240V, 1-phase	0.25…2.2 kW	0.25…2.2 kW	0.37…2.2 kW	N/A	N/A
Ratings 200…240V	0.25…4.0 kW	0.25…7.5 kW	0.37…7.5 kW	0.37…7.5 kW	2.2…37 kW
Ratings 400…480V	0.37…4.0 kW	0.37…11 kW	0.37…11 kW	0.37…11 kW	2.2…250 kW
Ratings 500…600V	N/A	N/A	0.75…11 kW	0.75…11 kW	N/A
Ratings 690V	N/A	N/A	N/A	N/A	N/A
Ambient Temperature	IP20 -10 °C to 50 °C	IP20 -10 °C to 50 °C	IP20 -10 °C to 50 °C	IP20 -10 °C to 50 °C	IP20 0 °C to 50 °C
EMC Filters	Internal (1-phase) External (3-phase)	Internal (1-phase and 3-phase)	Internal (1-phase) External (3-phase)	External (3-phase)	External (3-phase)
Standards	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick
Carrier Frequency	2…16 kHz	2…10 kHz	2…16 kHz	2…16 kHz	2…10 kHz
Overload Capability	150% for 60 s 200% for 3 s	150% for 60 s 200% for 3 s	150% for 60 s 200% for 3 s	150% for 60 s 200% for 3 s	110% for 60 s
Control Performance	- Volts per Hertz - Slip Compensation	- Volts per Hertz - Slip Compensation	- Volts per Hertz - Slip Compensation - Sensorless Vector	- Volts per Hertz - Slip Compensation - Sensorless Vector - Speed control with or without Encoder Feedback	- Volts per Hertz - Slip Compensation
Communications Options	- Integral RS485 - RTU Slave	- Integral RS485 - RTU Slave	- Integral RS485 - RTU Slave - DeviceNet - ControlNet - EtherNet - Profibus - LonWorks - BACnet	- Integral RS485 - RTU Slave - DeviceNet - ControlNet - EtherNet - Profibus - LonWorks - BACnet	- Integral RS485 - RTU Slave - DeviceNet - ControlNet - EtherNet - Profibus - LonWorks - BACnet
Product Selection	**Page 1-84, 1-101**	**Page 1-86, 1-101**	**Page 1-88, 1-101**	**Page 1-90, 1-101**	**Page 1-92, 1-101**

PowerFlex 70, 700, 753

Bulletin	**20A…**	**20B…**	**20F…**
Type	**PowerFlex 70**	**PowerFlex 700**	**PowerFlex 753**
Ratings 240V, 1-phase	N/A	N/A	N/A
Ratings 200…240V	0.37…15 kW	0.37…55 kW	N/A
Ratings 400…480V	0.37…37 kW	0.37…132 kW	0.75…250 kW
Ratings 500…600V	0.37…37 kW	0.37…110 kW	N/A
Ratings 690V	N/A	45…132 kW	N/A
Ambient Temperature	IP20 or IP66 0 °C to 50 °C	IP20 0 °C to 50 °C	IP00 / IP20 / IP54 0 °C to 50 °C
EMC Filters	Internal	Internal	Internal
Standards	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick	UL, CE, CSA, C-Tick, GOST-R
Carrier Frequency	2…12 kHz	2…10 kHz	2…12 kHz
Overload Capability	Normal Duty Application 110% - 60 s 150% - 3 s Heavy Duty Application 150% - 60 s 200% - 3 s	Normal Duty Application 110% - 60 s 150% - 3 s Heavy Duty Application 150% - 60 s 200% - 3 s	Normal Duty Application 110% - 60 s 150% - 3 s Heavy Duty Application 150% - 60 s 180% - 3 s
Control Performance	- Volts per Hertz - Slip Compensation - Sensorless Vector - Field Oriented Control with or without Encoder for Speed Control and Torque Regulation	- Volts per Hertz - Slip Compensation - Sensorless Vector - Field Oriented Control with or without Encoder for Speed Control and Torque Regulation	- Volts per Hertz - Slip Compensation - Sensorless Vector - Field Oriented Control with or without Encoder for Speed Control and Torque Regulation
Communications Options	- DeviceNet - ControlNet - EtherNet - RS485 DF1 - Profibus - InterBus - CanOpen - LonWorks - HVAC Modbus RTU - ModBus - Metasys - BACnet	- DeviceNet - ControlNet - EtherNet - RS485 DF1 - Profibus - InterBus - CanOpen - HVAC Modbus RTU - ModBus - Metasys - BACnet	- DeviceNet - ControlNet - EtherNet - Remote I/O - RS485 DF1 - Profibus - InterBus - CanOpen - ModBus - BACnet / IP
Product Selection	**Page 1-94, 1-101**	**Page 1-96, 1-101**	**Page 1-98, 1-101**

PowerFlex 4 AC Drive

- 0.25…2.2 kW @ 240V 1-phase
  0.25…4 kW @ 400V 3-phase
  (240V and 480V 3-phase also available)
- V/Hz control
- Versions with and without integral dynamic brake chopper
- Integral RS 485 communication: allows multi-drop configurations (up to 4 additional PowerFlex 4 Class drives on one network node)
- Integral programming keypad and local LED status indication
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero-stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions	Cat. No.
[kW]	[A]		Cont.	60 s	3 s		H x W x D	
0.2	1.3	200…240V 50/60Hz, 1-phase, EMC Filter, no Brake Chopper	1.4	2.1	2.8	A	152x80x136	**22A-A1P4N113**
0.4	1.9		2.1	3.2	4.2	A	152x80x136	**22A-A2P1N113**
0.75	3.3		3.6	5.4	7.2	A	152x80x136	**22A-A3P6N113**
1.5	6.1		6.8	10.2	13.6	B	180x100x136	**22A-A6P8N113**
2.2	8.9		9.6	14.4	19.2	B	180x100x136	**22A-A9P6N113**
0.2	1.3	200…240V 50/60Hz, 1-phase, no EMC Filter, no Brake Chopper	1.4	2.1	2.8	A	152x80x136	**22A-A1P4N103**
0.4	1.9		2.1	3.2	4.2	A	152x80x136	**22A-A2P1N103**
0.75	3.3		3.6	5.4	7.2	A	152x80x136	**22A-A3P6N103**
1.5	6.1		6.8	10.2	13.6	B	180x100x136	**22A-A6P8N103**
2.2	8.9		9.6	14.4	19.2	B	180x100x136	22A-A9P6N103
0.2	1.3	200…240V 50/60Hz, 1-phase, EMC Filter, Brake Chopper	1.5	2.3	3	A	152x80x136	**22A-A1P5N114**
0.4	1.9		2.3	3.5	4.6	A	152x80x136	**22A-A2P3N114**
0.75	3.3		4.5	6.8	9	A	152x80x136	**22A-A4P5N114**
1.5	6.1		8	12	16	B	180x100x136	**22A-A8P0N114**
0.2	1.3	200…240V 50/60Hz, 1-phase, no EMC Filter, Brake Chopper	1.5	2.3	3	A	152x80x136	22A-A1P5N104
0.4	1.9		2.3	3.5	4.6	A	152x80x136	**22A-A2P3N104**
0.75	3.3		4.5	6.8	9	A	152x80x136	**22A-A4P5N104**
1.5	6.1		8	12	16	B	180x100x136	22A-A8P0N104
0.2	1.3	200…240V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	1.5	2.3	3	A	152x80x136	22A-B1P5N104
0.4	1.9		2.3	3.5	4.6	A	152x80x136	22A-B2P3N104
0.75	3.3		4.5	6.8	9	A	152x80x136	**22A-B4P5N104**
1.5	6.1		8	12	16	A	152x80x136	22A-B8P0N104
2.2	8.9		12	18	24	B	180x100x136	22A-B012N104
3.7	15.3		17.5	25.5	34	B	180x100x136	22A-B017N104
0.4	1.1	400…480V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	1.4	2.1	2.8	A	152x80x136	**22A-D1P4N104**
0.75	1.9		2.3	3.5	4.6	A	152x80x136	**22A-D2P3N104**
1.5	3.5		4	6	8	A	152x80x136	**22A-D4P0N104**
2.2	5		6	9	12	B	180x100x136	**22A-D6P0N104**
3.7	8.4		8.7	13.1	17.4	B	180x100x136	**22A-D8P7N104**

See Publication 22-TD001… for complete product information.

PowerFlex 4 Options

	Cat. No.
External EMC Filter for up to 10 m of Motor Cable	
EMC Filter PowerFlex 4, 200…240V, 3-phase, 9.5 A, Frame A	22-RF9P5-AS
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	**22-RF021-BS**
EMC Filter PowerFlex 4, 400…480V, 3-phase, 5.7 A, Frame A	**22-RF5P7-AS**
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BS**
External EMC Filter for >10 m up to 100 m of Motor Cable	
EMC Filter PowerFlex 4, 200…240V, 1-phase, 10 A, Frame A	**22-RF010-AL**
EMC Filter PowerFlex 4/40, 200…240V, 1-phase, 18 A, Frame B	**22-RF018-BL**
EMC Filter PowerFlex 4, 200…240V, 3-phase, 9.5 A, Frame A	22-RF9P5-AL
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	22-RF021-BL
EMC Filter PowerFlex 4, 400…480V, 3-phase, 5.7 A, Frame A	**22-RF5P7-AL**
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BL**
External User Interface Modules	
Panel Mount, IP66, Full Numeric LCD, Cable 2 m	**22-HIM-C2S**
Hand Held, IP30, Full Numeric LCD, Cable 1 m	**22-HIM-A3**
Bezel Kit, IP20 for use with 22-HIM-A3	**22-HIM-B1**
DSI HIM Cable, 1 m	22-HIM-H10
DSI HIM Cable, 2.9 m	22-HIM-H30
Communication Options	
Built in RS485 (standard)	—
Compact Logix to DSI	**1769-SM2**
RJ45 One Port to Two Ports Splitter	AK-U0-RJ45-SC1
RJ45 120 Ohm Terminating Resistors (2 pcs)	AK-U0-RJ45-TR1
Communication Option, RJ45 Dual Position Terminal Block (5 pcs)	**AK-U0-RJ45-TB2P**
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Serial Converter Module with Software DriveExplorer Light Version	**22-SCM-232**
Programming Software	
DriveExplorer, Full version	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**

See Publication 22-TD001… for complete product information.

PowerFlex 4M AC Drive

- 0.25 kW…2.2 kW @ 240V 1-phase
  0.25…11 kW @ 400V 3-phase
  (240V and 480V 3-phase also available)
- V/Hz control
- Small physical size with feed-through wiring and in-built EMC filter
- Integral RS 485 communication: allows multi-drop configurations
  (up to 4 additional PowerFlex 4 Class drives on one network node)
- Integral programming keypad and local LED status indication
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero-Stacking (no spacing required between drives)

PowerFlex 4M 200-240V

Typical Motor Rating		Input Voltage	Drive Output (HD) [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.2	1.3	200…240V 50/60Hz, 1-phase, EMC Filter, no Brake Chopper	1.6	2.4	3.2	A	174x72x136	**22F-A1P6N113**
0.4	1.9		2.5	3.8	5	A	174x72x136	**22F-A2P5N113**
0.75	3.3		4.2	6.3	8.4	A	174x72x136	**22F-A4P2N113**
1.5	6.1		8	12	16	B	174x100x136	**22F-A8P0N113**
2.2	8.9		11	16.5	22	B	174x100x136	**22F-A011N113**
0.2	1.3	200…240V 50/60Hz, 1-phase, no EMC Filter, no Brake Chopper	1.6	2.4	3.2	A	174x72x136	**22F-A1P6N103**
0.4	1.9		2.5	3.8	5	A	174x72x136	**22F-A2P5N103**
0.75	3.3		4.2	6.3	8.4	A	174x72x136	**22F-A4P2N103**
1.5	6.1		8	12	16	B	174x100x136	**22F-A8P0N103**
2.2	8.9		11	16.5	22	B	174x100x136	22F-A011N103
0.2	1.3	200…240V 50/60Hz, 3-phase, no EMC Filter, no Brake Chopper (…104 with Brake Chopper)	1.6	2.4	3.2	A	174x72x136	22F-B1P6N103
0.4	1.9		2.5	3.8	5	A	174x72x136	22F-B2P5N103
0.75	3.3		4.2	6.3	8.4	A	174x72x136	22F-B4P2N103
1.5	6.1		8	12	16	A	174x72x136	22F-B8P0N103
2.2	8.9		12	18	24	B	174x100x136	22F-B012N103
3.7	15.3		17.5	25.5	34	B	174x100x136	22F-B017N103
5.5	21		25	37.5	50	C	260x130x180	22F-B025N104
7.5	28		33	49.5	66	C	260x130x180	22F-B033N104

PowerFlex 4M 400-480V

Typical Motor Rating		Input Voltage	Drive Output (HD) [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.4	1.1	400…480V 50/60Hz, 3-phase, EMC Filter, no Brake Chopper (…114 with Brake Chopper)	1.5	2.1	2.8	A	174x72x136	**22F-D1P5N113**
0.75	1.9		2.5	3.8	5	A	174x72x136	**22F-D2P5N113**
1.5	3.5		4.2	6.3	8.4	A	174x72x136	**22F-D4P2N113**
2.2	5		6	9	12	B	174x100x136	**22F-D6P0N113**
3.7	8.4		8.7	13.1	17.4	B	174x100x136	**22F-D8P7N113**
5.5	11.4		13	19.5	26	C	260x130x180	**22F-D013N114**
7.5	15		18	27	36	C	260x130x180	**22F-D018N114**
11	22		24	36	48	C	260x130x180	**22F-D024N114**

PowerFlex 4M 400-480V, continued

Typical Motor Rating		Input Voltage	Drive Output (HD) [A]			Frame Size	Dimensions	Cat. No.
[kW]	[A]		Cont.	60 s	3 s		H x W x D	
0.4	1.1	400…480V 50/60Hz, 3-phase, no EMC Filter, no Brake Chopper (…104 with Brake Chopper)	1.5	2.1	2.8	A	174x72x136	**22F-D1P5N103**
0.75	1.9		2.5	3.8	5	A	174x72x136	**22F-D2P5N103**
1.5	3.5		4.2	6.3	8.4	A	174x72x136	**22F-D4P2N103**
2.2	5		6	9	12	B	174x100x136	**22F-D6P0N103**
3.7	8.4		8.7	13.1	17.4	B	174x100x136	**22F-D8P7N103**
5.5	11.4		13	19.5	26	C	260x130x180	**22F-D013N104**
7.5	15		18	27	36	C	260x130x180	**22F-D018N104**
11	22		24	36	48	C	260x130x180	22F-D024N104

PowerFlex 4M Options

	Cat. No.
External EMC Filter for up to 100 m motor cable lenght	
240V, 50/60 Hz, 1-phase, Frame A, 10 A	22F-RF010-AL
240V, 50/60 Hz, 1-phase, Frame B, 18 A	22F-RF025-BL
240V, 50/60 Hz, 3-phase, Frame A, 9.5 A	22F-RF9P5-AL
240V, 50/60 Hz, 3-phase, Frame B, 21 A	22F-RF021-BL
240V, 50/60 Hz, 3-phase, Frame C, 39 A	22F-RF039-CL
480V, 50/60 Hz, 3-phase, Frame A, 6 A	**22F-RF6P0-AL**
480V, 50/60 Hz, 3-phase, Frame B, 12 A	**22F-RF012-BL**
480V, 50/60 Hz, 3-phase, Frame C, 26 A	22F-RF026-CL
External User Interface Modules	
Panel Mount, IP66, Full Numeric LCD, Cable 2 m	**22-HIM-C2S**
Hand Held, IP30, Full Numeric LCD, Cable 1 m	**22-HIM-A3**
Bezel Kit, IP20 for use with 22-HIM-A3	**22-HIM-B1**
DSI HIM Cable, 1 m	22-HIM-H10
DSI HIM Cable, 2.9 m	22-HIM-H30
Communication Options	
Built in RS485 (standard)	—
Compact Logix to DSI	**1769-SM2**
RJ45 One Port to Two Ports Splitter	AK-U0-RJ45-SC1
RJ45 120 Ohm Terminating Resistors (2 pcs)	AK-U0-RJ45-TR1
Communication Option, RJ45 Dual Position Terminal Block (5 pcs)	**AK-U0-RJ45-TB2P**
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Serial Converter Module with Software DriveExplorer Light Version	**22-SCM-232**
Programming Software	
DriveExplorer, Full version	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**

See Publication 22F-TD001… for complete product information.

PowerFlex 40 AC Drive

- 0.37…2.2 kW @ 240V 1-phase
  0.37…11 kW @ 400…600V 3-phase
  (240V 3-phase also available)
- V/Hz and Sensorless Vector control
- Integral dynamic brake chopper
- Communication modules for industrial automation networks
- Integral RS 485 communication: allows multi-drop configurations (up to 4 additional PowerFlex 4 Class drives on one network node)
- Integral programming keypad and local LED status indication
- StepLogic with AND/OR and timer/counter functions
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.4	1.9	200…240V 50/60Hz, 1-phase, EMC Filter, Brake Chopper	2.3	3.5	4.6	B	180x100x136	**22B-A2P3N114**
0.75	3.3		5	7.5	10	B	180x100x136	**22B-A5P0N114**
1.5	6.1		8	12	16	B	180x100x136	**22B-A8P0N114**
2.2	8.9		12	18	24	C	260x130x180	22B-A012N114
0.4	1.9	200…240V 50/60Hz, 1-phase, no EMC Filter, Brake Chopper	2.3	3.5	4.6	B	180x100x136	**22B-A2P3N104**
0.75	3.3		5	7.5	10	B	180x100x136	**22B-A5P0N104**
1.5	6.1		8	12	16	B	180x100x136	**22B-A8P0N104**
2.2	8.9		12	18	24	C	260x130x180	22B-A012N104
0.4	1.9	200…240V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	2.3	3.5	4.6	B	180x100x136	22B-B2P3N104
0.75	3.3		5	7.5	10	B	180x100x136	22B-B5P0N104
1.5	6.1		8	12	16	B	180x100x136	22B-B8P0N104
2.2	8.9		12	18	24	B	180x100x136	22B-B012N104
3.7	15.3		17.5	25.5	34	B	180x100x136	22B-B017N104
5.5	21		24	36	48	C	260x130x180	22B-B024N104
7.5	28		33	49.5	66	C	260x130x180	22B-B033N104
0.4	1.1	400…480V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	1.4	2.1	2.8	B	180x100x136	**22B-D1P4N104**
0.75	1.9		2.3	3.5	4.6	B	180x100x136	**22B-D2P3N104**
1.5	3.5		4	6	8	B	180x100x136	**22B-D4P0N104**
2.2	5		6	9	12	B	180x100x136	**22B-D6P0N104**
4	8.4		10.5	15	20	B	180x100x136	**22B-D010N104**
5.5	11.4		12	18	24	C	260x130x180	**22B-D012N104**
7.5	15		17	25.5	34	C	260x130x180	**22B-D017N104**
11	22		24	36	48	C	260x130x180	**22B-D024N104**
0.75	—	600V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	1.7	2.5	3.4	B	180x100x136	**22B-E1P7N104**
1.5	—		3	4.5	6	B	180x100x136	22B-E3P0N104
2.2	—		4.2	6.3	8.4	B	180x100x136	22B-E4P2N104
4	—		6.6	9.9	13.2	B	180x100x136	22B-E6P6N104
5.5	—		9.9	14.8	19.8	C	260x130x180	22B-E9P9N104
7.5	—		12	18	24	C	260x130x180	22B-E012N104
11	—		19	28	38	C	260x130x180	22B-E019N104

See Publication 22-TD001… for complete product information.

Options

	Cat. No.
External EMC Filter for up to 10 m of Motor Cable	
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	**22-RF021-BS**
EMC Filter PowerFlex 40, 200…240V, 3-phase, 34 A, Frame C	22-RF034-CS
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BS**
EMC Filter PowerFlex 40, 400…480V, 3-phase, 18 A, Frame C	**22-RF018-CS**
EMC Filter PowerFlex 40/400, 480V, 3-phase, 26 A, Frame C	**22-RF026-CS**
External EMC Filter for up to 100 m of Motor Cable	
EMC Filter PowerFlex 4/40, 200…240V, 1-phase, 18 A, Frame B	**22-RF018-BL**
EMC Filter PowerFlex 40, 200…240V, 1-phase, 25 A, Frame C	22-RF025-CL
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	22-RF021-BL
EMC Filter PowerFlex 40, 200…240V, 3-phase, 34 A, Frame C	22-RF034-CL
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BL**
EMC Filter PowerFlex 40, 400…480V, 3-phase, 18 A, Frame C	**22-RF018-CL**
EMC Filter PowerFlex 40, 480V, 3-phase, 26 A, Frame C	**22-RF026-CL**
External User Interface Modules	
Panel Mount, IP66, Full Numeric LCD, Cable 2 m	**22-HIM-C2S**
Hand Held, IP30, Full Numeric LCD, Cable 1 m	**22-HIM-A3**
Bezel Kit, IP20 for use with 22-HIM-A3	**22-HIM-B1**
DSI HIM Cable, 1 m	22-HIM-H10
DSI HIM Cable, 2.9 m	22-HIM-H30
Communication Options	
Built in RS485 (standard)	—
RJ45 One Port to Two Ports Splitter	AK-U0-RJ45-SC1
RJ45 120 Ohm Terminating Resistors (2 pcs)	AK-U0-RJ45-TR1
Communication Option, RJ45 Dual Position Terminal Block (5 pcs)	**AK-U0-RJ45-TB2P**
Communication Module, DeviceNet (Frame B or C cover is needed)	**22-COMM-D**
Communication Module, ControlNet™ (Frame B or C cover is needed)	**22-COMM-C**
Communication Module, Profibus™ (Frame B or C cover is needed)	**22-COMM-P**
Communication Module, EtherNet/IP (Frame B or C cover is needed)	**22-COMM-E**
Communication Module, LonWorks (Frame B or C cover is needed)	22-COMM-L
Communication Module, BACnet (Frame B or C cover is needed)	22-COMM-B
Compact Logix to DSI Interface	**1769-SM2**
Cover for Frame B PowerFlex 40	**22B-CCB**
Cover for Frame C PowerFlex 40	**22B-CCC**
PC Programming Tool	
Serial Converter Module with Software DriveExplorer Light Version	**22-SCM-232**
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Programming Software	
DriveExplorer for PC	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**

See Publication 22-TD001… for complete product information.

PowerFlex 40P AC Drive

- 0.37…11 kW @ 400…600V 3-phase (240V 3-phase also available)
- V/Hz and Sensorless Vector control
- Integral dynamic brake chopper
- Communication modules for industrial automation networks
- Integral RS 485 communication: allows multi-drop configurations (up to 4 additional PowerFlex 4 Class drives on one network node)
- Speed control with and without encoder feedback
- StepLogic with AND/OR and timer/counter functions
- Safe-off option confirming to EN 954-1 Cat. 3
- Specific features for fibre applications
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions	Cat. No.
[kW]	[A]		Cont.	60 s	3 s		H x W x D	
0.4	1.9	200…240V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	2.3	3.5	4.6	B	180x100x136	**22D-B2P3N104**
0.75	3.3		5	7.5	10	B	180x100x136	22D-B5P0N104
1.5	6.1		8	12	16	B	180x100x136	22D-B8P0N104
2.2	8.9		12	18	24	B	180x100x136	22D-B012N104
3.7	15.3		17.5	25.5	34	B	180x100x136	22D-B017N104
5.5	21		24	36	48	C	260x130x180	22D-B024N104
7.5	28		33	49.5	66	C	260x130x180	22D-B033N104
0.4	1.1	400…480V 50/60Hz, 3-phase, no EMC Filter, Brake Chopper	1.4	2.1	2.8	B	180x100x136	**22D-D1P4N104**
0.75	1.9		2.3	3.5	4.6	B	180x100x136	**22D-D2P3N104**
1.5	3.5		4	6	8	B	180x100x136	**22D-D4P0N104**
2.2	5		6	9	12	B	180x100x136	**22D-D6P0N104**
4	8.4		10.5	15	20	B	180x100x136	**22D-D010N104**
5.5	11.4		12	18	24	C	260x130x180	22D-D012N104
7.5	15		17	25.5	34	C	260x130x180	22D-D017N104
11	22		24	36	48	C	180x100x136	22D-D024N104
0.75	-	600V 50/60Hz, 3-Phase, no EMX Filter, Brake Chopper	1.7	2.5	3.4	B	180x100x136	22D-E1P7N104
1.5	-		3	4.5	6	B	180x100x136	22D-E3P0N104
2.2	-		4.2	6.3	8.4	B	180x100x136	22D-E4P2N104
4	-		6.6	9.9	13.2	B	260x130x180	22D-E6P6N104
5.5	-		9.9	14.8	19.8	C	260x130x180	22D-E9P9N104
7.5	-		12	18	24	C	260x130x180	22D-E012N104
11	-		19	28	38	C	260x130x180	22D-E019N104

See Publication 22D-TD001… for complete product information.

Options

	Cat. No.
External EMC Filter for up to 10 m of Motor Cable	
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	**22-RF021-BS**
EMC Filter PowerFlex 40, 200…240V, 3-phase, 34 A, Frame C	22-RF034-CS
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BS**
EMC Filter PowerFlex 40, 400…480V, 3-phase, 18 A, Frame C	**22-RF018-CS**
EMC Filter PowerFlex 40/400, 480V, 3-phase, 26 A, Frame C	**22-RF026-CS**
External EMC Filter for up to 100 m of Motor Cable	
EMC Filter PowerFlex 4/40, 200…240V, 1-phase, 18 A, Frame B	**22-RF018-BL**
EMC Filter PowerFlex 40, 200…240V, 1-phase, 25 A, Frame C	22-RF025-CL
EMC Filter PowerFlex 4/40, 200…240V, 3-phase, 21 A, Frame B	22-RF021-BL
EMC Filter PowerFlex 40, 200…240V, 3-phase, 34 A, Frame C	22-RF034-CL
EMC Filter PowerFlex 4/40, 400…480V, 3-phase, 12 A, Frame B	**22-RF012-BL**
EMC Filter PowerFlex 40, 400…480V, 3-phase, 18 A, Frame C	**22-RF018-CL**
EMC Filter PowerFlex 40, 480V, 3-phase, 26 A, Frame C	**22-RF026-CL**
External User Interface Modules	
Panel Mount, IP66, Full Numeric LCD, Cable 2 m	**22-HIM-C2S**
Hand Held, IP30, Full Numeric LCD, Cable 1 m	**22-HIM-A3**
Bezel Kit, IP20 for use with 22-HIM-A3	**22-HIM-B1**
DSI HIM Cable, 1 m	22-HIM-H10
DSI HIM Cable, 2.9 m	22-HIM-H30
Communication Options	
Built in RS485 (standard)	—
RJ45 One Port to Two Ports Splitter	AK-U0-RJ45-SC1
RJ45 120 Ohm Terminating Resistors (2 pcs)	AK-U0-RJ45-TR1
Communication Option, RJ45 Dual Position Terminal Block (5 pcs)	**AK-U0-RJ45-TB2P**
Communication Module, DeviceNet (Frame B or C cover is needed)	**22-COMM-D**
Communication Module, ControlNet (Frame B or C cover is needed)	**22-COMM-C**
Communication Module, Profibus (Frame B or C cover is needed)	**22-COMM-P**
Communication Module, EtherNet/IP (Frame B or C cover is needed)	**22-COMM-E**
Communication Module, LonWorks (Frame B or C cover is needed)	22-COMM-L
Communication Module, BACnet (Frame B or C cover is needed)	22-COMM-B
Compact Logix to DSI Interface	**1769-SM2**
Cover for Frame B PowerFlex 40	**22B-CCB**
Cover for Frame C PowerFlex 40	**22B-CCC**
PC Programming Tool	
Serial Converter Module with Software DriveExplorer Light Version	**22-SCM-232**
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Programming Software	
DriveExplorer for PC	**9306-4EXP02ENE**
DriveTools SP Suite -includes DriveExecutive, DriveObserver	**9303-4DTS01ENE**
Safe-Off Option	
DriveGuard® Safe-Off Board	**20A-DG01**

See Publication 22D-TD001… for complete product information.

PowerFlex 400 AC Drive

- 0.37…250 kW @ 400V 3-phase (240V and 480V 3-phase also available)
- V/Hz control
- For industrial pump and fan applications
- Communication modules for industrial automation networks
- Integral RS 485 communication: allows multi-drop configurations (up to 4 additional PowerFlex 4 Class drives on one network node)
- Integral programming keypad and local LED status indication
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]		Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s			
2.2	9	200…240V 50/60Hz 3-phase	12	13.2	C	260x130x180	22C-B012N103
3.7	16		17.5	19.25	C	260x130x180	22C-B017N103
5.5	21		24	26.4	C	260x130x180	22C-B024N103
7.5	28		33	36.3	C	260x130x180	22C-B033N103
11	40		49	54	D	384x250x205.4	22C-B049A103
15	52		65	71	D	384x250x205.4	22C-B065A103
18.5	61		75	82	D	384x250x205.4	22C-B075A103
22	72		90	99	D	384x250x205.4	22C-B090A103
30	95		120	132	E	589x370x260	22C-B120A103
37	117		145	159	E	589x370x260	22C-B145A103
2.2	5	400…480V 50/60Hz 3-phase	6	6.6	C	260x130x180	**22C-D6P0N103**
4	8.4		10.5	11.5	C	260x130x180	**22C-D010N103**
5.5	11.4		12	13.2	C	260x130x180	22C-D012N103
7.5	15		17	18.7	C	260x130x180	**22C-D017N103**
11	22		22	24	C	260x130x180	**22C-D022N103**
15	29		30	33	C	260x130x180	**22C-D030N103**
18.5	34		38	42	D	384x250x205.4	**22C-D038A103**
22	40		45.5	50	D	384x250x205.4	**22C-D045A103**
30	53		60	66	D	384x250x205.4	**22C-D060A103**
37	65		72	79	E	589x370x260	**22C-D072A103**
45	78		88	96	E	589x370x260	**22C-D088A103**
55	98		105	115	E	589x370x260	**22C-D105A103**
75	132		142	156	E	589x370x260	**22C-D142A103**
90	158		170	187	F	850x425x280	22C-D170A103
110	194		208	228	F	850x425x280	22C-D208A103
132	235		260	286	G	892x425x264	22C-D260A103
160	276		310	341	G	892x425x264	22C-D310A103
200	345		370	407	H	1364x529x359	22C-D370A103
250	440		460	506	H	1364x529x359	22C-D460A103

See Publication 22C-TD001… for complete product information.

Options

	Cat. No.
Conversion Kit	
Converts IP20 drive to IP30, NEMA/UL Type 1 enclosure. Includes conduit box, mounting screws and plastic top panel.	22-JBAC
Converts IP20 drive to IP30, NEMA/UL Type 1 enclosure. Includes communication option conduit box, mounting screws and plastic top panel.	22-JBCC
RFI Filters	
EMC Filter, 18 A	**22-RF018-CS**
EMC Filter, 26 A	**22-RF026-CS**
EMC Filter, 36 A	**22-RFD036**
EMC Filter, 50 A	**22-RFD050**
EMC Filter, 70 A	**22-RFD070**
EMC Filter, 100 A	**22-RFD100**
EMC Filter, 150 A	**22-RFD150**
EMC Filter, 180 A	**22-RFD180**
EMC Filter, 208 A	22-RFD208
EMC Filter, 323 A	22-RFD323
EMC Filter, 480 A	22-RFD480
External User Interface Modules	
Remote (Panel Mount) LCD Display, Digital Speed Control, CopyCat Capable.	**22-HIM-C2S**
Hand Held, IP30, Full Numeric LCD, Cable 1 m	**22-HIM-A3**
Bezel Kit, IP20 for use with 22-HIM-A3	**22-HIM-B1**
DSI HIM Cable, 1 m	22-HIM-H10
DSI HIM Cable, 2.9 m	22-HIM-H30
Communication Options	
Built in RS458 (Standard)	—
RJ45 One Port to Two Ports Splitter	AK-U0-RJ45-SC1
RJ45 120 Ohm Terminating Resistors (2 pcs)	AK-U0-RJ45-TR1
Communication Option, RJ45 Dual Position Terminal Block (5 pcs)	**AK-U0-RJ45-TB2P**
Communication Module, DeviceNet (Frame B or C cover is needed)	**22-COMM-D**
Communication Module, ControlNet (Frame B or C cover is needed)	**22-COMM-C**
Communication Module, Profibus (Frame B or C cover is needed)	**22-COMM-P**
Communication Module, EtherNet/IP (Frame B or C cover is needed)	**22-COMM-E**
Communication Module, LonWorks (Frame B or C cover is needed)	22-COMM-L
Communication Module, BACnet (Frame B or C cover is needed)	22-COMM-B
PowerFlex Compact I/O DSI/Modbus Communications Module	**1769-SM2**
Frame C Drive (PowerFlex 400) ★	**22C-CCC**
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Serial Converter Module with Software DriveExplorer Light Version	**22-SCM-232**
Programming Software	
DriveExplorer for PC	**9306-4EXP02ENE**
DriveTools SP Suite -includes DriveExecutive, DriveObserver	**9303-4DTS01ENE**
Other Options	
Auxiliary Relay Board - Expands drive output capabilities - Frames D…H only.	AK-U9-RLB1

★ If NEMA 1/IP30 is required, must also order 22-JBCC (Frame C drives only).
See Publication 22C-TD001… for complete product information.

PowerFlex 70 AC Drive

- 0.37…37 kW @ 400V 3-phase (240V, 480V and 600V 3-phase also available)
- V/Hz, Sensorless Vector and Flux Vector control
- Speed and torque control with and without encoder feedback
- Communication modules for a wide range of industrial automation networks
- Small physical size, with in-built EMC filter and dynamic brake chopper
- IP66 stand alone and flange mount versions also available
- Optional multi-lingual LCD HIM with start-up assistance
- Safe-off option conforming to EN954-1 Cat. 3
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.37	1.06	400…480V 50/60Hz, 3-phase, EMC Filter, Brake Chopper	1.3	1.4	1.9	B	235x171x180	**20AC1P3A0AYNANC0**
0.75	1.88		2.1	2.4	3.2	B	235x171x180	**20AC2P1A0AYNANC0**
1.5	3.5		3.5	4.5	6	B	235x171x180	**20AC3P5A0AYNANC0**
2.2	5		5	5.5	7.5	B	235x171x180	**20AC5P0A0AYNANC0**
4	8.4		8.7	9.9	13.2	B	235x171x180	**20AC8P7A0AYNANC0**
5.5	11		11.5	13	17.4	C	300x186x180	**20AC011A0AYNANC0**
7.5	15		15.4	17.2	23.1	C	300x186x180	**20AC015A0AYNANC0**
11	21		22	24.2	33	D	350x220x180	**20AC022A0AYNANC0**
15	29		30	33	45	D	350x220x180	**20AC030A0AYNANC0**
18.5	34		37	45	60	D	350x220x180	**20AC037A0AYNANC0**
22	40		43	55	74	D	350x220x180	**20AC043A0AYNANC0**
30	53		60	66	90	E	556x280x207	**20AC060A0AYNANC0**
37	65		72	90	120	E	556x280x207	**20AC072A0AYNANC0**
0.37	1.06	400…480V 50/60Hz, 3-phase, EMC Filter, Brake Chopper, IP66 with Full Numeric User Interface	1.3	1.4	1.9	B	240x171x203	20AC1P3C3AYNANC0
0.75	1.88		2.1	2.4	3.2	B	240x171x203	20AC2P1C3AYNANC0
1.5	3.5		3.5	4.5	6	B	240x171x203	20AC3P5C3AYNANC0
2.2	5		5	5.5	7.5	B	240x171x203	20AC5P0C3AYNANC0
4	8.4		8.7	9.9	13.2	B	240x171x203	20AC8P7C3AYNANC0
5.5	11		11.5	13	17.4	D	350x220x211	20AC011C3AYNANC0
7.5	15		15.4	17.2	23.1	D	350x220x211	20AC015C3AYNANC0
11	21		22	24.2	33	D	350x220x211	20AC022C3AYNANC0
15	29		30	33	45	D	350x220x211	20AC030C3AYNANC0
18.5	34		37	45	60	D	350x220x211	20AC037C3AYNANC0
22	40		43	55	74	D	350x220x211	20AC043C3AYNANC0
30	53		60	66	90	E	556x280x220	20AC060C3AYNANC0
37	65		72	90	120	E	556x280x220	20AC072C3AYNANC0

See Publication 20A-TD001… for complete product information.

Options

	Cat. No.
User Interface Modules	
Full Numeric LCD	**20-HIM-A3**
Programming Only LCD	**20-HIM-A5**
DPI-Port Cable, 1 m	**20-HIM-H10**
Full Numeric LCD, IP66, includes 3 m cable	**20-HIM-C3S**
Programming Only LCD, IP66, includes 3 m cable	20-HIM-C5S
DPI-Port Cable Extension, 0.30 m	1202-H03
DPI-Port Cable Extension, 1 m	1202-H10
DPI-Port Cable Extension, 3 m	1202-H30
DPI-Port Cable Extension, 9 m	1202-H90
Internal Communication Option	
Communication Module, DeviceNet	**20-COMM-D**
Communication Module, ControlNet	**20-COMM-C**
Communication Module, ControlNet Fiber	20-COMM-Q
Communication Module, EtherNet/IP	**20-COMM-E**
Communication Module, RS485 DF1	20-COMM-S
Communication Module, Profibus	**20-COMM-P**
Communication Module, InterBus	20-COMM-I
Communication Module, CANopen	20-COMM-K
Communication Module, LonWorks	20-COMM-L
Selectable Communication Module, HVAC ModBus RTU, Metasys N2	20-COMM-H
BACnet Communication Module	20-COMM-B
Communication Module, Option Compact I/O to DPI/SCANport module	**1769-SM1**
Encoder Option	
Encoder Feedback, 12/5V DC, PowerFlex 70	**20A-ENC-1**
Safe-Off Option	
DriveGuard Safe-Off Board PowerFlex 70	**20A-DG01**
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Serial Converter Module with Software DriveExplorer Light Version	**1203-SSS**
Programming Software	
DriveExplorer, Full version	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**
Internal Brake Resistors, 5 % Duty Cycle	
Brake Resistor Kit, PowerFlex 70 Frame A, 400…600V, 115 Ohm	20AD-DB1-B
Brake Resistor Kit, PowerFlex 70 Frame B, 400…600V, 115 Ohm	20AD-DB1-B
Brake Resistor Kit, PowerFlex 70 Frame C, 400…600V, 115 Ohm	20AD-DB1-C
Brake Resistor Kit, PowerFlex 70 Frame D, 400…480V, 62 Ohm	20AD-DB1-D

See Publication 20A-TD001… for complete product information.

PowerFlex 700 AC Drive

- 0.75…160 kW, 400V 3-phase, (240V, 480V, 600V and 690V 3-phase also available)
- V/Hz, Sensorless Vector and Flux Vector control
- Speed and torque control with and without encoder feedback
- Communication modules for a wide range of industrial automation networks
- Optional multi-lingual LCD HIM with start-up assistance
- Book-shelf housing with in-built EMC filter and dynamic brake chopper
- TorqProve for automated torque and brake control, ideal for lifting applications
- Parameter linking functionality
- Position regulator and 16 step indexing table (with encoder feedback)
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.75	1.88	400…480V 50/60Hz, 3-phase, EMC Filter, Brake Chopper	2.1	2.4	3.2	0	336x110x200	**20BC2P1A0AYNANC0**
1.5	3.5		3.5	4.5	6	0	336x110x200	**20BC3P5A0AYNANC0**
2.2	5		5	5.5	7.5	0	336x110x200	**20BC5P0A0AYNANC0**
4	8.4		8.7	9.9	13.2	0	336x110x200	**20BC8P7A0AYNANC0**
5.5	11		11.5	13	17.4	0	336x110x200	**20BC011A0AYNANC0**
7.5	15		15.4	17.2	23.1	1	336x135x200	**20BC015A0AYNANC0**
11	21		22	24.2	33	1	336x135x200	**20BC022A0AYNANC0**
15	29		30	33	45	2	343x220x200	**20BC030A0AYNANC0**
18.5	34		37	45	60	2	343x220x200	**20BC037A0AYNANC0**
22	40		43	56	74	3	518x220x200	**20BC043A0AYNANC0**
30	53		56	64	86	3	518x220x200	**20BC056A0AYNANC0**
37	65		72	84	112	3	518x220x200	**20BC072A0AYNANC0**
45	78		85	94	128	4	759x220x200	**20BC085A0AYNANC0**
55	98		105	116	158	5	645x309x276	**20BC105A0AYNANC0**
75	132		140	154	210	5	645x309x276	**20BC140A0AYNANC0**
90	158		170	187	255	6	850x404x276	**20BC170A0AYNANC0**
110	194		205	220	289	6	850x404x276	**20BC205A0AYNANC0**
132	235		260	286	390	6	850x404x276	20BC260A0AYNANC0
45	78	400…480V 50/60Hz, 3-Phase, EMC Filter, no Brake Chopper	85	94	128	4	759x220x200	20BC085A0ANNANC0
55	98		105	116	158	5	645x309x276	20BC105A0ANNANC0
75	132		140	154	210	5	645x309x276	**20BC140A0ANNANC0**
90	158		170	187	255	6	850x404x276	20BC170A0ANNANC0
110	194		205	220	289	6	850x404x276	**20BC205A0ANNANC0**
132	235		260	286	390	6	850x404x276	20BC260A0ANNANC0
160	276		292	322	438	7	1500x515x407	20BC292A0ANNANC0

See Publication 20B-TD001… for complete product information.

Options

	Cat. No.
User Interface Modules	
Full Numeric LCD	**20-HIM-A3**
Programming Only LCD	**20-HIM-A5**
DPI-Port Cable, 1 m	**20-HIM-H10**
Full Numeric LCD, IP66, includes 3 m cable	**20-HIM-C3S**
Programming Only LCD, IP66, includes 3 m cable	20-HIM-C5S
DPI-Port Cable Extension, 0.30 m	1202-H03
DPI-Port Cable Extension, 1 m	1202-H10
DPI-Port Cable Extension, 3 m	1202-H30
DPI-Port Cable Extension, 9 m	1202-H90
Internal Communication Option	
Communication Module, DeviceNet	**20-COMM-D**
Communication Module, ControlNet	**20-COMM-C**
Communication Module, ControlNet Fiber	20-COMM-Q
Communication Module, EtherNet/IP	**20-COMM-E**
Communication Module, RS485 DF1	20-COMM-S
Communication Module, Profibus	**20-COMM-P**
Communication Module, InterBus	20-COMM-I
Communication Module, CANopen	20-COMM-K
Communication Module, LonWorks	20-COMM-L
Selectable Communication Module, HVAC ModBus RTU, Metasys N2	20-COMM-H
BACnet Communication Module	20-COMM-B
Communication Module, Option Compact I/O to DPI/SCANport module	**1769-SM1**
Encoder Option	
PowerFlex 700 Encoder Feedback, 12/5VDC	**20B-ENC-2**
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Serial Converter Module with Software DriveExplorer Light Version	**1203-SSS**
Programming Software	
DriveExplorer, Full version	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**
Internal Brake Resistors, 5 % Duty Cycle	
Brake Resistor Kit, PowerFlex 700 Frame 0, 400…480V, 115 Ohm	20BD-DB1-0
Brake Resistor Kit, PowerFlex 700 Frame 1, 400…480V, 115 Ohm	20BD-DB1-1
Brake Resistor Kit, PowerFlex 700 Frame 2, 400…480V, 68 Ohm	20BD-DB1-2

See Publication 20B-TD001… for complete product information.

PowerFlex 753 AC Drive

- 0.75…250 kW, 400V 3-phase (480V 3-phase also available)
- V/Hz, Sensorless Vector and Flux Vector control
- Communication modules for a wide range of industrial automation networks
- Optional multi-lingual LCD HIM with start-up assistance
- Book-shelf housing with in-built EMC filter and dynamic brake chopper
- IP00/IP20, Flange Mount, IP54
- Conformal Coating
- Safe Torque-off option conforming to EN954-1 Cat. 3
- Safe Speed Monitor Ple/SIL3 Cat.4
- DeviceLogix, Preventative Diagnostics
- Programmable via DriveExplorer or DriveExecutive (1203-USB required)
- Zero stacking (no spacing required between drives)

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.75	1.88	400…480V 50/60Hz, 3-phase, EMC Filter, Brake Chopper	2.1	3.1	3.7	2	424x135x212	20F11NC2P1JA0NNNNN
1.5	3.5		3.5	5.2	6.3	2	424x135x212	20F11NC3P5JA0NNNNN
2.2	5.0		5.0	7.5	9.0	2	424x135x212	20F11NC5P0JA0NNNNN
4.0	8.4		8.7	13	15.6	2	424x135x212	20F11NC8P7JA0NNNNN
5.5	11		11.5	17.2	20.7	2	424x135x212	20F11NC011JA0NNNNN
7.5	15		15.4	16.9	23.1	2	424x135x212	20F11NC015JA0NNNNN
11	21		22	24.2	33	2	424x135x212	20F11NC022JA0NNNNN
15	29		30	33	45	3	454x190x212	20F11NC030JA0NNNNN
18.5	34		37	40.7	55.5	3	454x190x212	20F11NC037JA0NNNNN
22	40		43	47.3	64.5	3	454x190x212	20F11NC043JA0NNNNN
30	53		60	66	90	4	474x222x212	20F11NC060JA0NNNNN
37	65		72	79.2	108	4	474x222x212	20F11NC072JA0NNNNN
45	78		85	93.5	127	5	550x270x212	20F11NC085JA0NNNNN
55	98		104	114	156	5	550x270x212	20F11NC104JA0NNNNN
75	132		140	154	210	6	666x308x346	20F1ANC140JA0NNNNN
90	158		170	187	255	6	666x308x346	20F1ANC170JA0NNNNN
110	194		205	225	307	6	666x308x346	20F1ANC205JA0NNNNN
132	235		260	286	390	6	666x308x346	20F1ANC260JA0NNNNN
160	276		302	332	453	7	882x430x350	20F1ANC302JA0NNNNN
200	345		367	404	550	7	882x430x350	20F1ANC367JA0NNNNN
250	400		456	501	684	7	882x430x350	20F1ANC456JA0NNNNN
75	132	400…480V 50/60Hz, 3-Phase, EMC Filter, no Brake Chopper	140	154	210	6	666x308x346	20F1ANC140JN0NNNNN
90	158		170	187	255	6	666x308x346	20F1ANC170JN0NNNNN
110	194		205	225	307	6	666x308x346	20F1ANC205JN0NNNNN
132	235		260	286	390	6	666x308x346	20F1ANC260JN0NNNNN
160	276		302	332	453	7	882x430x350	20F1ANC302JN0NNNNN
200	345		367	404	550	7	882x430x350	20F1ANC367JN0NNNNN
250	400		456	501	684	7	882x430x350	20F1ANC456JN0NNNNN

See Publication 750-TD001… for complete product information.

Typical Motor Rating		Input Voltage	Drive Output [A]			Frame Size	Dimensions H x W x D	Cat. No.
[kW]	[A]		Cont.	60 s	3 s			
0.75	1.88	IP54, 400…480V 50/60Hz, 3-phase, EMC Filter, Brake Chopper	2.1	3.1	3.7	2	543x215x222	20F11GC2P1JA0NNNNN
1.5	3.5		3.5	5.2	6.3	2	543x215x222	20F11GC3P5JA0NNNNN
2.2	5.0		5.0	7.5	9.0	2	543x215x222	20F11GC5P0JA0NNNNN
4.0	8.4		8.7	13	15.6	2	543x215x222	20F11GC8P7JA0NNNNN
5.5	11		11.5	17.2	20.7	2	543x215x222	20F11GC011JA0NNNNN
7.5	15		15.4	16.9	23.1	2	543x215x222	20F11GC015JA0NNNNN
11	21		22	24.2	33	2	543x215x222	20F11GC022JA0NNNNN
15	29		30	33	45	3	551x268x220	20F11GC030JA0NNNNN
18.5	34		37	40.7	55.5	3	551x268x220	20F11GC037JA0NNNNN
22	40		43	47.3	64.5	3	551x268x220	20F11GC043JA0NNNNN
30	53		60	66	90	4	571x300x220	20F11GC060JA0NNNNN
37	65		72	79.2	108	5	647x248x220	20F11GC072JA0NNNNN
45	78		85	93.5	127	5	647x248x220	20F11GC085JA0NNNNN
55	98		104	114	156	6	1289x609x465	20F1AGC104JA0NNNNN
75	132		140	154	210	6	1289x609x465	20F1AGC140JA0NNNNN
90	158		170	187	255	6	1289x609x465	20F1AGC170JA0NNNNN
110	194		205	225	307	6	1289x609x465	20F1AGC205JA0NNNNN
132	235		260	286	390	7	1614x609x465	20F1AGC260JA0NNNNN
160	276		302	332	453	7	1614x609x465	20F1AGC302JA0NNNNN
200	345		367	404	550	7	1614x609x465	20F1AGC367JA0NNNNN
250	400		456	501	684	7	1614x609x465	20F1AGC456JA0NNNNN
55	98	IP54, 400…480V 50/60Hz, 3-Phase, EMC Filter, no Brake Chopper	104	114	156	6	1289x609x465	20F1AGC104JN0NNNNN
75	132		140	154	210	6	1289x609x465	20F1AGC140JN0NNNNN
90	158		170	187	255	6	1289x609x465	20F1AGC170JN0NNNNN
110	194		205	225	307	6	1289x609x465	20F1AGC205JN0NNNNN
132	235		260	286	390	7	1614x609x465	20F1AGC260JN0NNNNN
160	276		302	332	453	7	1614x609x465	20F1AGC302JN0NNNNN
200	345		367	404	550	7	1614x609x465	20F1AGC367JN0NNNNN
250	400		456	501	684	7	1614x609x465	20F1AGC456JN0NNNNN

See Publication 750-TD001… for complete product information.

Options

	Cat. No.
User Interface Modules	
Full Numeric LCD, Enhanced	**20-HIM-A6**
DPI-Port Cable, 1 m	**20-HIM-H10**
Full Numeric LCD, Enhanced, IP66, includes 3 m cable	**20-HIM-C6S**
DPI-Port Cable Extension, 0.30 m	1202-H03
DPI-Port Cable Extension, 1 m	1202-H10
DPI-Port Cable Extension, 3 m	1202-H30
DPI-Port Cable Extension, 9 m	1202-H90
Internal Communication Option	
PowerFlex 750 Series DeviceNet Module	20-750-DNET
PowerFlex 750 Series ControlNet Module	20-750-CNETC
PowerFlex 750 Series ProfiBus DPV1 Module	20-750-PBUS
PowerFlex 750 Series BACnet/IP Module	20-750-BNETIP
PowerFlex 750 Series 20-COMM Carrier Card	20-750-20COMM
I/O Option	
PF750 Series, 2262 I/O (24V) with 2 Relay Outputs	20-750-2262C-2R
PF750 Series, 2262 I/O (115V) with 2 Relay Outputs	20-750-2262D-2R
PF750 Series, 2263 I/O (24V) with 1 Relay and 2 Transistor Outputs	20-750-2263C-1R2T
PF750 Series, 24V Aux. Power Supply	20-750-APS
Encoder Option	
PF750 Series, Incremental Encoder	20-750-ENC-1
PF750 Series, Dual Incremental Encoder	20-750-DENC-1
Safety Option	
PF750 Series, Safe Torque Off	20-750-S
PF750 Series, Safe Speed Monitor	20-750-S1
Internal Brake Resistor	
PF750 Series, Internal Brake Resistor, 480V, Frame 2	20-750-DB1-D2
Protection Option	
PF750 Series, EMC Plate with Core, Frame 2	20-750-EMC1-F2
PF750 Series, EMC Plate with Core, Frame 3	20-750-EMC1-F3
PF750 Series, EMC Plate with Cores, Frame 4	20-750-EMC1-F4
PF750 Series, EMC Plate with Cores, Frame 5	20-750-EMC1-F5
PF750 Series, IP21/NEMA 1 Kit, Frame 2	20-750-NEMA1-F2
PF750 Series, IP21/NEMA 1 Kit, Frame 3	20-750-NEMA1-F3
PF750 Series, IP21/NEMA 1 Kit, Frame 4	20-750-NEMA1-F4
PF750 Series, IP21/NEMA 1 Kit, Frame 5	20-750-NEMA1-F5
PF750 Series, IP21/NEMA 1 Kit, Frame 6	20-750-NEMA1-F6
PF750 Series, IP21/NEMA 1 Kit, Frame 7	20-750-NEMA1-F7
PC Programming Tool	
USB to DSI/DPI Converter with Software DriveExplorer Light Version	**1203-USB**
Programming Software	
DriveExplorer, Full version	**9306-4EXP02ENE**
DriveTools SP Suite, DriveExecutive and DriveObserver	**9303-4DTS01ENE**

See Publication 750-TD001… for complete product information.

External Dynamic Brake Resistors for PowerFlex 4, 4M, 40, 40P, 70, 700 and 753

kW	Braking Torque % of Motor Power	Duty Cycle %	Description	Cat. No.
200…240V Drives				
0.37	100 %	46 %	Dynamic Brake Resistor, 200…480V, 91 Ohm, 86 W	**AK-R2-091P500**
0.75	100 %	23 %		**AK-R2-091P500**
1.5	100 %	11 %		**AK-R2-091P500**
2.2	100 %	15 %	Dynamic Brake Resistor, 200…480V, 47 Ohm, 166 W	AK-R2-047P500
4	79 %	11 %		AK-R2-047P500
5.5	90 %	10 %	Dynamic Brake Resistor, 200…480V, 30 Ohm, 260 W	AK-R2-030P1K2
7.5	66 %	10 %		AK-R2-030P1K2
11	90 %	10 %		★
15	66 %	10 %		★
400…480V Drives				
0.37	100 %	47 %	Dynamic Brake Resistor, 200…480V, 360 Ohm, 86 W	**AK-R2-360P500**
0.75	100 %	23 %		**AK-R2-360P500**
1.5	100 %	12 %		**AK-R2-360P500**
2.2	100 %	24 %	Dynamic Brake Resistor, 200…480V, 120 Ohm, 260 W	**AK-R2-120P1K2**
4	100 %	13 %		**AK-R2-120P1K2**
5.5	90 %	10 %		**AK-R2-120P1K2**
7.5	66 %	10 %		**AK-R2-120P1K2**
11	90 %	10 %		★
15	66 %	10 %		★
500…600V Drives ‡				
0.37	100%	46%	Dynamic Brake Resistor, 200…480V, 360 Ohm, 86 W	**AK-R2-360P500**
0.75	100%	23%		**AK-R2-360P500**
1.5	100%	11%		**AK-R2-360P500**
2.2	100%	24%	Dynamic Brake Resistor, 200…480V, 120 Ohm, 260 W	**AK-R2-120P1K2**
4	100%	13%		**AK-R2-120P1K2**
5.5	100%	9%		**AK-R2-120P1K2**
7.5	100%	7%		**AK-R2-120P1K2**
11	100%	9%		★
15	100%	7%		★

★ For 11 and 15 kW applications, use two 7.5 size resistors wired in parallel.
‡ For PowerFlex 40, 40P, 70 and 700
For installation instructions refer to publication RA-IN004…
For detailed information on dynamic braking refer to publication PFLEX-AT001…

Line Reactors, 3 % Input Impedance

kW	PowerFlex 4/4M Cat. No.	PowerFlex 40/40P Cat. No.	PowerFlex 400 Cat. No.
200…240V 3-Phase Drives			
0.2	1321-3R2-A	1321-3R2-A	
0.75	**1321-3R8-B**	**1321-3R8-B**	
1.5	1321-3R8-A	1321-3R8-A	
2.2	1321-3R12-A	1321-3R12-A	1321-3R12-A
4	1321-3R18-A	1321-3R18-A	1321-3R18-A
5.5	1321-3R25-A	1321-3R25-A	1321-3R25-A
7.5	1321-3R35-A	1321-3R35-A	1321-3R35-A
11			1321-3R45-A
15			1321-3R55-A
18.5			1321-3R80-A
22			1321-3R80-A
30			1321-3R100-A
37			1321-3R130-A
400…480V 3-Phase Drives			
0.37	**1321-3R2-B**	**1321-3R2-B**	
0.75	**1321-3R2-B**	**1321-3R2-B**	
1.5	**1321-3R4-B**	**1321-3R4-B**	
2.2	**1321-3R4-B**	**1321-3R4-B**	**1321-3R8-C**
4	**1321-3R8-B**	**1321-3R8-B**	**1321-3R12-B**
5.5	**1321-3R12-B**	**1321-3R12-B**	**1321-3R12-B**
7.5	**1321-3R18-B**	**1321-3R18-B**	**1321-3R18-B**
11	**1321-3R25-B**	**1321-3R25-B**	**1321-3R25-B**
15			**1321-3R35-B**
18.5			**1321-3R35-B**
22			**1321-3R45-B**
30			1321-3R55-B
37			**1321-3R80-B**
45			**1321-3R80-B**
55			1321-3R100-B
75			**1321-3R130-B**
90			**1321-3R160-B**
110			1321-3R200-B
132			1321-3RB250-B
160			1321-3RB320-B
200			1321-3RB400-B
250			1321-3R500-B

For technical details refer to publication 1321-TD001…

Switch Selection

Bulletin	**194L**	**194E**	**194E**
Type	**Control and Load Switches 12…40 A**	**Load Switches 16…100 A**	**Load Switches 125…315 A**
Features	• 12, 16, 20, 25, 40 A • Inductive Load-Rated control and load switch • 1 to 16 pole switch control configurations for OFF-ON, Change-over, Star-Delta (Wye- Delta), Reversing, Ammeter, Voltmeter, and Step Switch applications	• 16, 25, 32, 40, 63, 80, 100 A • Inductive Load-Rated load switch • 3 or 6 pole switch configurations for OFF-ON or Change-over applications	• 125, 160, 250, 315 A • Inductive Load-Rated load switch • 3 or 4 pole switch configurations for OFF-ON applications
	• UL, CSA ratings “Suitable as At-Motor Disconnect” • Front/Door or Base/DIN rail mounting • Made of environmentally friendly materials		
Actuators	• Uniformly styled actuators available in selector knob, disk-style, rectangular-style and key-operated versions (Type 1/12/3R, IP66) • Actuator colours in grey/black or red/yellow and padlockable versions • Legend plates available in O-I international markings and text styles	• Uses 194L actuators for standardization among line, available in selector-knob, disk-style, rectangular-style and key-operated versions (Type 1/12/3R, IP66) • Actuator colours in grey/black or red/yellow and padlockable versions • Legend plates available in O-I international markings and text styles	• Uses larger 194E actuators available in selector knob, disk-style, (Type 1/12/3R, IP66) • Actuator colours in grey/black or red/yellow and padlockable versions • Legend plates available in O-I international markings and text styles
Open Switch or Enclosed	Available as open switch or in IP66 thermoplastic enclosure		Available as open switch
UL/CSA El. Ratings			
Rated Voltage U_e [V AC]	600V		
Rated Current I^e [A]	12…40 A @ 600V	16…100 A @ 600V	125…315 A @ 600V
Short Circuit Ratings [A]	5 kA		
Switching Rate [ops/h]	120		
Mechanical Life [ops]	1 million	0.2 million	0.1 million (125…160 A) 0.075 million (250…315 A)
Protection Class Acc. to IEC 529	Switch bodies IP20 actuators IP66		
Protection Class Acc. to UL CSA	Actuators UL Type 1/12 (selector style) and UL 1/3/3R/12 (disc style)		
Optional Accessories	Multi-length shafts and shaft extension kits, terminal covers	Multi-length shafts and shaft extension kits, auxiliary contacts, power poles, grounding poles, terminal covers	
Standards/Approvals	UL 508, CSA C22.2 No. 14, IEC 947-3 Low voltage switch gear and control gear part 3, CE		
Product Selection	**See page 1-104**	**See page 1-110**	**See page 1-110**

Control and Load Switches 194L

- Rated current up to 40 A
- Large selection of functions and switching positions
- Screws and central fixture ø 22.5 mm
- Front- or base mounting
- Finger-proof switch bodies per IP20
- Water spray and dust-proof actuator per IP66
- Easily accessible terminals
- Clearly marked terminals

Switch Body

+

Actuator

Switch Bodies for Bulletin 194L, Front/Base Mounting

Function	I AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
ON-OFF Switches							
	12	1	**194L-E12-1751**	**194L-A12-1751**			
		2	**194L-E12-1752**	**194L-A12-1752**			
		3	**194L-E12-1753**	**194L-A12-1753**			
		4	**194L-E12-1754**	194L-A12-1754			
		6	194L-E12-1756	194L-A12-1756			
	16	1	**194L-E16-1751**	194L-A16-1751			
		2	**194L-E16-1752**	**194L-A16-1752**			
		3	**194L-E16-1753**	**194L-A16-1753**			
		4	**194L-E16-1754**	**194L-A16-1754**			
		6	194L-E16-1756	194L-A16-1756		**194L-HE...**	
	20	1	194L-E20-1751	194L-A20-1751	4, 6	A, E	001
		2	**194L-E20-1752**	194L-A20-1752	4	A, E, I, P, S	175
1 0		3	**194L-E20-1753**	**194L-A20-1753**	6	A, E, G‡, I, L, N‡, S	175
		4	**194L-E20-1754**	194L-A20-1754			
		6	194L-E20-1756	194L-A20-1756		**194L-HC...**	
	25	1	194L-E25-1751	194L-A25-1751		B, D★	001
		2	**194L-E25-1752**	194L-A25-1752	4	A, C★, E, I, L	175
		3	**194L-E25-1753**	**194L-A25-1753**	6	G‡, N‡	175
		4	**194L-E25-1754**	**194L-A25-1754**			
		6	194L-E25-1756	194L-A25-1756			
	32	3	194L-E32-1753	194L-A32-1753			
		4	194L-E32-1754	194L-A32-1754			
		6	194L-E32-1756	194L-A32-1756			
	40	3	194L-E40-1753	194L-A40-1753			
		4	194L-E40-1754	194L-A40-1754			
		6	194L-E40-1756	194L-A40-1756			

Ordering Example: Switch Body: **194L-E12-1751**; Actuator for Screw Fixture Type A: **194L-HE4A-175**

★ Key out position see page 1-109.

‡ With both 0-1 and OFF/ON inscriptions.

Switch Bodies for Bulletin 194L, Front/Base Mounting, continued

Function	I AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
ON-OFF Switches							
	12	2	194L-E12-1782	194L-A12-1782		**194L-HE...**	
		3	194L-E12-1783	194L-A12-1783	4, 6	A, E	001
		4	194L-E12-1784	194L-A12-1784	4	A, E	178
	16	2	194L-E16-1782	194L-A16-1782	6	A, E, G‡, N‡	178
		3	194L-E16-1783	194L-A16-1783		**194L-HC...**	
		4	194L-E16-1784	194L-A16-1784		B, D★	001
					4	A, C★	178
	12	1	194L-E12-9001	194L-A12-9001		**194L-HE...**	
					4, 6	A, E	001
					4	A, E	900
					6	A, E	900
						194L-HC...	
						B, D★	001
					4	A	900
	12	1	**194L-E12-9751**	194L-A12-9751		**194L-HE...**	
					4, 6	A, E	001
					4	A, E	975
					6	G‡, N‡	975
						194L-HC...	
						B, D★	001
					4	A	975
	12	1	194L-E12-9251	194L-A12-9251		**194L-HE...**	
					4, 6	A, E	001
					4	A, E	925
					6	A, E	925
						194L-HC...	
						B, D	001
					4	A	925
Changeover Switches							
	12	1	**194L-E12-2501**				
		2	194L-E12-2502				
		3	194L-E12-2503				
	16	1	194L-E16-2501			**194L-HE...**	
		2	194L-E16-2502		4, 6	A	001
		3	194L-E16-2503		4	A	250
	20	1	194L-E20-2501		6	A	250
		2	194L-E20-2502			**194L-HC...**	
		3	194L-E20-2503			B	001
	25	1	194L-E25-2501		4	A, C★	250
		2	194L-E25-2502				
		3	194L-E25-2503				

Ordering Example: Switch Body: **194L-E12-1782**; Actuator for Central Fixture Type A: **194L-HC4A-178**.

★ Key out position see page 1-109.

‡ With both 0-1 and OFF/ON inscriptions.

Switch Bodies for Bulletin 194L, Front/Base Mounting, continued

Function	I AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
Changeover Switches							
	12	1	**194L-E12-3251**	**194L-A12-3251**	4, 6	**194L-HE…** A	001
		2	**194L-E12-3252**	**194L-A12-3252**	4	A, P, S	325
		3	**194L-E12-3253**	**194L-A12-3253**	6	A, S	325
		4	**194L-E12-3254**	194L-A12-3254			
	16	1	194L-E16-3251	194L-A16-3251			
		2	194L-E16-3252	194L-A16-3252			
		3	**194L-E16-3253**	**194L-A16-3253**			
		4	194L-E16-3254	194L-A16-3254		**194L-HC…**	
	20	1	194L-E20-3251	194L-A20-3251		B, D★	001
		2	194L-E20-3252	194L-A20-3252		A, C★	325
		3	**194L-E20-3253**	**194L-A20-3253**			
		4	194L-E20-3254	194L-A20-3254			
	25	1	194L-E25-3251	194L-A25-3251	4		
		2	194L-E25-3252	194L-A25-3252			
		3	194L-E25-3253	**194L-A25-3253**			
		4	194L-E25-3254	194L-A25-3254			
	32	3	194L-E32-3253	194L-A32-3253			
		4	194L-E32-3254	194L-A32-3254			
	40	3	194L-E40-3253	194L-A40-3253			
		4	194L-E40-3254	194L-A40-3254			
	12	1	194L-E12-3751		4, 6	**194L-HE…** A	001
					4	A	375
					6	A	375
						194L-HC…	
						B, D★	001
					4	A, C★	375
Reversing Switches							
	12	3	194L-E12-7303	194L-A12-7303	4, 6	**194L-HE…** A	001
	16	3	**194L-E16-7303**	**194L-A16-7303**	4	A, S	325
	20	3	194L-E20-7303	194L-A20-7303	6	A, S	325
	25	3	**194L-E25-7303**	**194L-A25-7303**		**194L-HC…**	
	40	3	194L-E40-7303	194L-A40-7303		B, D★	001
					4	A, C★	325
Star-Delta Switches							
	16	3	194L-E16-7323	194L-A16-7323	4, 6	**194L-HE…** A	001
					4	A	725
	25	3	**194L-E25-7323**	**194L-A25-7323**	6	A	725
						194L-HC…	
	40	3	194L-E40-7323			B, D★	001
					4	A, C★	725

Ordering Example: Switch Body: **194L-E12-3251**; Actuator for Central Fixture Type A: **194L-HC4A-325**.
★ Key out position see page 1-109.

Switch Bodies for Bulletin 194L, Front/Base Mounting, continued

Function	I AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
Step Switches							
	12	1	194L-E12-4251	194L-A12-4251	4, 6	**194L-HE...** A	001
		2	**194L-E12-4252**		4	A	425
		3	194L-E12-4253		6	A	425
	16	1	194L-E16-4251	194L-A16-4251			
		2	194L-E16-4252			**194L-HC...**	
		3	194L-E16-4253			B, D★	001
	25	1	194L-E25-4251	194L-A25-4251	4	A, C★	425
		2	194L-E25-4252				
		3	194L-E25-4253				
	12	1	**194L-E12-4511**		4, 6	**194L-HE...** A	001
		2	194L-E12-4512		4	A	451
		3	194L-E12-4513		6	A	451
	16	1	194L-E16-4511				
		2	194L-E16-4512			**194L-HC...**	
		3	194L-E16-4513			B, D★	001
	25	1	194L-E25-4511		4	A	451
		2	194L-E25-4512				
		3	194L-E25-4513				
	12	1	**194L-E12-4271**		4, 6	**194L-HE...** A	001
					4	A	427
					6	A	427
						194L-HC...	
						B, D★	001
					4	A, C★	427
	12	1	194L-E12-5251		4, 6	**194L-HE...** A	001
					4	A	525
		2	194L-E12-5252		6	A	525
						194L-HC...	
		3	194L-E12-5253			B, D★	001
					4	A, C★	525
	12	1	**194L-E12-5261**		4, 6	**194L-HE...** A	001
					4	A	526
					6	A	526
						194L-HC...	
						B, D★	001
					4	A, C★	526

Ordering Example: Switch Body: **194L-E12-4251**; Actuator for Central Fixture Type B: **194L-HCB-001**.
★ Key out position see page 1-109.

Switch Bodies for Bulletin 194L, Front/Base Mounting, continued

Function	I AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
Voltmeter Selector Switches							
	12	1	**194L-E12-8251**	194L-A12-8251	4, 6 4 6 4	**194L-HE…** A A, P A **194L-HC…** B, D★ A	 001 825 825 001 825
	12	1	**194L-E12-8271**	194L-A12-8271	4, 6 4 6 4	**194L-HE…** A A A **194L-HC…** B, D★ A	 001 827 827 001 827
	12	1	194L-E12-8291	194L-A12-8291	4, 6 4 6 4	**194L-HE…** A A A **194L-HC…** B, D★ A	 001 829 829 001 829
Ammeter Selector Switches							
	12	1	**194L-E12-8751**	194L-A12-8751	4, 6 4 6 4	**194L-HE…** A A, P A **194L-HC…** B, D★ A	 001 875 875 001 875
	12	1	194L-E12-8761	194L-A12-8761	4, 6 4 6 4	**194L-HE…** A A A **194L-HC…** B, D★ A	 001 876 876 001 876

Ordering Example: Switch Body: **194L-E12-8751**; Actuator for Central Fixture Type A: **194L-HC4A-875**.
★ Key out position see page 1-109.

Actuators for 194L

A

B

C

D

E

G

I

N

L

P, Q

S

Actuators with Central Fixture ø 22,5 mm

Type	Key Out Position	With Legend Plate 48 x 48 mm Cat. No.	Without Legend Plate Cat. No.
A Standard Switch		194L-HC4A-xxx	
B without Legend Plate			**194L-HCB-001**
C or D with Key Operator		194L-HC4CC-xxx	**194L-HCDC-001**
		194L-HC4CD-xxx	194L-HCDD-001
		194L-HC4CG-xxx	194L-HCDG-001
		194L-HC4CH-xxx	194L-HCDH-001
		194L-HC4CK-xxx	194L-HCDK-001
E Disconnect Switch		194L-HC4E-xxx	
I Emergency Stop		194L-HC4I-xxx	
L Main Switch/Emergency		194L-HC4L-xxx	

Actuators for Front or Base Mounting

Type	With Legend Plate 48 x 48 mm Cat. No.	With Legend Plate 67 x 67 mm Cat. No.
A Standard Switch	194L-HE4A-xxx	194L-HE6A-xxx
E Disconnect Switch (1 padlock)	194L-HE4E-xxx	194L-HE6E-xxx
I Emergency Stop	194L-HE4I-xxx	194L-HE6I-xxx
L Main Switch/Emergency (1 padlock)	194L-HE4L-xxx	194L-HE6L-xxx
S With legend plate	194L-HE4S-xxx	194L-HE6S-xxx
G Disconnect Switch (3 padlocks)	194E-HE4G-xxx	194L-HE6G-xxx
N Main Switch/Emergency (3 padlocks)	194E-HE4N-xxx	194L-HE6N-xxx
P With DIN 45 mm Panel Cut-out	194L-HE4P-xxx	

xxx Legend plates and actuator combinations see page 1-104.

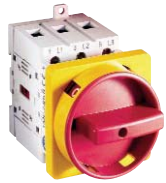
Bulletin 194E

Control and Load Switches

Product Selection

Control and Load Switches 194E

- Front- and base mounting
- Finger-proof switch body per IP20
- Water spray and dust-proof per IP66
- Easily accessible terminals
- Clearly marked terminals
- Wide range of accessories



194E (16 A…100 A)

194E (125 A …315 A)

Switch Bodies for 194E (16…100 A), Front/Base Mounting

Function	*I* AC-21A [A]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
ON-OFF Switches							
	16	3	**194E-E16-1753**	**194E-A16-1753**		**194L-HE…**	
	25		**194E-E25-1753**	**194E-A25-1753**	4	A, E, I, L	175
	32		**194E-E32-1753**	**194E-A32-1753**	6	A, E, G★, I, L, N★	175
	40		**194E-E40-1753**	**194E-A40-1753**	8	A, G★, I, N★	175
	63		**194E-E63-1753**	**194E-A63-1753**		**194L-HC…**	
	80		**194E-E80-1753**	**194E-A80-1753**	4	A, E, G★, I, L, N★	175
	100		**194E-E100-1753**	**194E-A100-1753**	6	A, E, G★, I, L, N★	175
Changeover Switches							
	16	3	194E-E16-3753	194E-A16-3753		**194L-HE…**	
	25	3	194E-E25-3753	**194E-A25-3753**	4	A, E	375
	32	3	194E-E32-3753	**194E-A32-3753**	6	A, E	375
	40	3	194E-E40-3753	**194E-A40-3753**	8	A	375
	63	3	**194E-E63-3753**	**194E-A63-3753**		**194L-HC… ‡**	
	80	3	194E-E80-3753	194E-A80-3753	4	A, E, I, L	375
	100	3	194E-E100-3753	**194E-A100-3753**	6	A, E, I, L	375

Ordering Example: Switch Body: **194E-E25-1753**; Actuator for Screw Fixture Type A: **194L-HE4A-175**.

‡ Not available for 80/100 A switches

Switch Bodies for 194E (125…315 A), Front/Base Mounting

Function	*I* AC-21A [A]	*I* AC-23A [kW]	Poles	Front/Door Mounting Cat. No.	Base/DIN Rail Mounting Cat. No.	Combinations Actuator / Legend Plate Size	Type	No.
ON-OFF Switches								
	125	45	3	**194E-E125-1753**	**194E-A125-1753**			
	160	55		**194E-E160-1753**	**194E-A160-1753**			
	250	90		**194E-E250-1753**	**194E-A250-1753**			
	315	110		**194E-E315-1753**	**194E-A315-1753**		**194E-HE…**	
	125	45	4	**194E-E125-1754**	**194E-A125-1754**	8	A, G★, I★, N★	175
	160	55		**194E-E160-1754**	**194E-A160-1754**	13	A, G★, I★, N★	175
	250	90		**194E-E250-1754**	**194E-A250-1754**			
	315	110		194E-E315-1754	194E-A315-1754			

Ordering Example: Switch Body: **194E-A125-1753**; Actuator for Screw Fixture Type A: **194E-HE8A-175**.

★ With both 0-1 and OFF/ON inscriptions.

Actuators for Bulletin 194E

A E G I L N S

Actuators with Central Fixture ø 22,5 mm

Type	With Legend Plate 48 x 48 mm	With Legend Plate 67 x 67 mm	Without Legend Plate
	Cat. No.	Cat. No.	Cat. No.
A Standard Switch	**194L-HC4A-175**		**194L-HC4A-001**
E Disconnect Switch	**194L-HC4E-175**		194L-HC4E-001
G Disconnect Switch		**194L-HC6G-175**	
I Emergency Stop	194L-HC4I-175		
L Disconnect Switch/ Emergency Stop	**194L-HC4L-175**		
N Disconnect Switch/ Emergency Stop		**194L-HC6N-175**	

Actuators for Front or Base Mounting (16…100 A)

Type	With Legend Plate 0-I, 48 x 48 mm	With Legend Plate 0-I, 67 x 67 mm	With Legend Plate 0-I, 88 x 88 mm
	Cat. No.	Cat. No.	Cat. No.
A Standard Switch	**194L-HE4A-175**	**194L-HE6A-175**	194L-HE8A-175
E Disconnect Switch	**194L-HE4E-175**	**194L-HE6E-175**	
G Disconnect Switch	**194E-HE4G-175**	**194L-HE6G-175**	**194L-HE8G-175**
I Emergency Stop	**194L-HE4I-175**	**194L-HE6I-175**	
L Disconnect Switch/ Emergency Stop	**194L-HE4L-175**	194L-HE6L-175	
N Disconnect Switch/ Emergency Stop	**194E-HE4N-175**	**194L-HE6N-175**	**194L-HE8N-175**
S Standard Switch with Label S	194L-HE4S-175	194L-HE6S-175	

Actuators for Front or Base Mounting (125…315 A)

Type	With Legend Plate 0-I, 88 x 88 mm	With Legend Plate 0-I, 130 x 130 mm
	Cat. No.	Cat. No.
A Standard Switch	**194E-HE8A-175**	194E-HE13A-175
G Disconnect Switch	**194E-HE8G-175**	**194E-HE13G-175**
I Emergency Stop	194E-HE8I-175	194E-HE13I-175
N Disconnect Switch/Emergency Stop	**194E-HE8N-175**	**194E-HE13N-175**

For other Legend Plates and Actuator Combinations see Page 1-110.

194E Load Switches in Enclosure, Complete Switches

- IP66

Metric Conduit Openings

Poles	AC-21A/ 500V [A]	AC-23A/ 400V [kW]	Main Switches/Emergency Red/Yellow Cat. No.	Disconnect Switch Black/Grey Cat. No.
3	16	7.5	**194E-Y16M-1753-4N**	**194E-Y16M-1753-4G**
	25	11	**194E-Y25M-1753-6N**	**194E-Y25M-1753-6G**
	32	15	**194E-Y32M-1753-6N**	194E-Y32M-1753-6G
	40	18.5	194E-Y40M-1753-6N	194E-Y40M-1753-6G
	63	22	**194E-Y63M-1753-6N**	**194E-Y63M-1753-6G**
	80	37	194E-Y80M-1753-6N	194E-Y80M-1753-6G
	100	45	**194E-Y100M-1753-6N**	**194E-Y100M-1753-6G**
6	16	7.5	194E-Y16M-1756-6N	194E-Y16M-1756-6G
	25	11	194E-Y25M-1756-6N	194E-Y25M-1756-6G
	32	15	194E-Y32M-1756-6N	194E-Y32M-1756-6G
	40	18.5	194E-Y40M-1756-6N	194E-Y40M-1756-6G
	63	22	194E-Y63M-1756-6N	194E-Y63M-1756-6G

Poles	AC-21A/ 500V [A]	AC-23A/ 400V [kW]	Standard Switch O-I Cat. No.
3	16	7.5	194E-Y16M-1753-4A
	25	11	**194E-Y25M-1753-6A**
	32	15	194E-Y32M-1753-6A
	40	18.5	194E-Y40M-1753-6A
	63	22	194E-Y63M-1753-6A
	80	37	194E-Y80M-1753-6A
	100	45	194E-Y100M-1753-6A
6	16	7.5	194E-Y16M-1756-6A
	25	11	194E-Y25M-1756-6A
	32	15	194E-Y32M-1756-6A
	40	18.5	194E-Y40M-1756-6A
	63	22	194E-Y63M-1756-6A

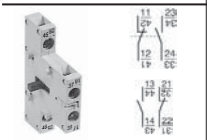
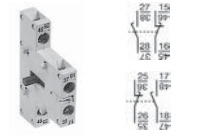
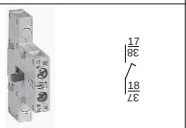
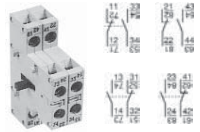
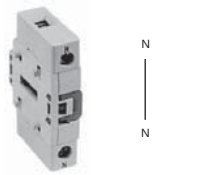
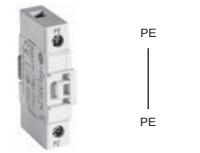
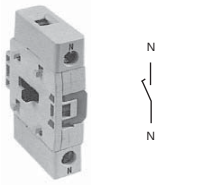
Accessories for Bulletin 194L and 194E

	Description	For Use With	PQ	Cat. No.
	Plastic Shafts: Length 44 mm Length 52 mm Length 57 mm	194L-A, 194E-A	5	**194L-G2830** **194L-G3194** **194L-G3195**
	Shaft Extensions Length 24 mm. Max. nos. of pieces per device is 4. 2 pieces per set.	194L-A, 194E-A	10	**194L-G2853**
	Metal Shaft Extensions Locking possibility with provision for locking in position «0» Length 110...235 mm Length 230...350 mm	194L-A, 194E-A	1	**194L-G3393** **194L-G3394**
	Inserts For modifying Bulletin 194L-G3393 and 194L-G3394 metalshaft extensions with switch position: I-0 90°. Provision for padlock in position «0».	194L-A	10	194L-G3398
 	Additional Nameplates For actuators: 48 x 48, 64 x 64 and 67 x 67 mm 88 x 88, 90 x 90, 130 x 130 and 135 x 135 mm	194L-H...	5	**194L-G3667** 194L-G3515
	Terminal Covers 3/4 poles	194L-E12/16	10	194L-E12-C34
		194L-E20/25		194L-E20-C34
		194L-A12/16		194L-A12-C34
		194L-A20/25		194L-A20-C34
	Terminal Covers 3 poles	194E-16	2	**194E-16-C3**
		194E-25/32		**194E-25-C3**
		194E-40/63		**194E-40-C3**
		194E-80/100		**194E-80-C3**
	Terminal Covers 4 poles	194E-16★	2	194E-16-C1
		194E-25/32		**194E-25-C4**
		194E-40/63		**194E-40-C4**
		194E-80/100		**194E-80-C4**

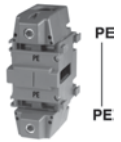
★ 1-pole cover to add to 194E-16-C3

PQ = Package Quantity

Accessories for Bulletin 194E (up to 100 A)

	Description	For Use With	Cat. No.
	**Auxiliary Contact Blocks** 1 N.O.+ 1 N.C. for left- or right-side mounting	194E-E25...100	**194E-E-P11**
		194E-A25...100	**194E-A-P11**
	**Auxiliary Contact Blocks** 1 early-make and 1 late-break contact for left- or right-side mounting	194E-E25...100	194E-E-PL11
		194E-A25...100	**194E-A-PL11**
	**Auxiliary Contact Blocks** 1 early-break contact for left- or right-side mounting.	194E-E16	194E-E16-PD10
		194E-E25...100	**194E-E-PD10**
		194E-A16	**194E-A16-PD10**
		194E-A25...100	**194E-A-PD10**
	**Auxiliary Contact Blocks** 2 N.O.+ 2 N.C. for left- or right-side mounting	194E-E25…100	**194E-E-P22**
		194E-A25…100	**194E-A-P22**
	**Neutral Terminal**	194E-E16	194E-E16-TN
		194E-E25/32	**194E-E32-TN**
		194E-E40/63	**194E-E63-TN**
		194E-E80/100	**194E-E100-TN**
		194E-A16	194E-A16-TN
		194E-A25/32	**194E-A32-TN**
		194E-A40/63	**194E-A63-TN**
		194E-A80/100	**194E-A100-TN**
	**Earth Terminal**	194E-E16	194E-E16-PE
		194E-E25/32	**194E-E32-PE**
		194E-E40/63	**194E-E63-PE**
		194E-E80/100	**194E-E100-PE**
		194E-A16	194E-A16-PE
		194E-A25/32	**194E-A32-PE**
		194E-A40/63	**194E-A63-PE**
		194E-A80/100	**194E-A100-PE**
	**Fourth Poles** early-make contact	194E-E16	**194E-E16-NP**
		194E-E25	**194E-E25-NP**
		194E-E32	**194E-E32-NP**
		194E-E40	**194E-E40-NP**
		194E-E63	**194E-E63-NP**
		194E-E80	**194E-E80-NP**
		194E-E100	**194E-E100-NP**
		194E-A16	**194E-A16-NP**
		194E-A25	**194E-A25-NP**
		194E-A32	**194E-A32-NP**
		194E-A40	**194E-A40-NP**
		194E-A63	**194E-A63-NP**
		194E-A80	**194E-A80-NP**
		194E-A100	**194E-A100-NP**

Accessories for Bulletin 194E (125 A...315 A)

	Description	For Use With	Cat. No.
	Terminal Cover 1 pole Box lugs	194E-125...160	**194E-AE125-C1**
		194E-250...315	**194E-AE250-C1**
	Terminal Cover 1 pole Bolt-on wiring	194E-125...160	194E-BF125-C1
		194E-250	**194E-BF250-C1**
	Metal Shaft Extension Length 200…400 mm	194E-125…315	**194E-AB40**
	Auxiliary Contact Blocks 2 NA + 1 NC for left- or right-side mounting. Base Mounting	194E-125…160	**194E-AB-P21-160**
		194E-250…315	**194E-AB-P21-315**
	Front Mounting	194E-125…160	194E-EF-P21-160
		194E-250…315	194E-EF-P21-315
	Neutral Terminals Right-side mounting Base mounting and front mounting Box lugs	194E-125…160	**194E-AE160-TN**
		194E-250…315	194E-AE315-TN
	**Earth Terminals** Left-side mounting Base mounting and front mounting Bolt-on wiring	194E-125…160	**194E-AE160-PE**
		194E-250…315	**194E-AE315-PE**

Notes

Logic

TABLE OF CONTENTS

Relays and Timers	2-2
Solid State Devices	2-21
Temperature Controllers	2-23
Programmable Controllers	2-24
Circuit Protection	2-34
Surge and Filter Protection	2-47
Power Supplies	2-51

Relays 700-HA, HC, HK

Bulletin	**700-HA**	**700-HC**	**700-HK**
Type	General-Purpose Relay	Interposing/Isolation Relay	Interposing/Isolation Relay
Features	• Pin-style terminals • Standard ON/OFF flag indicator • Electrical schematic on face • Clear cover for visual inspection • Optional Push-to-test and manual override • Optional LED	• Blade-style terminals • Standard ON/OFF flag indicator • Electrical schematic on face • Clear cover for visual inspection • Optional push-to-test and manual override • Optional LED	• Optional pilot light • Retainer clip (comes with socket) • Low switching capacity • Push-to-test & manual override
Contact Ratings			
Contact Form	DPDT, 3PDT	DPDT, 4PDT	SPDT, DPDT
Contact Type	Single Bifurcated	Single	Single
Contact Material	AgNi, AgNi + Gold	AgNi, AgNi + Gold	AgNi, AgNi + Gold
Max. operating current under resistive load	700-HA: 10 A 700-HAX: 6 A	10 A (DPDT) 7 A (4PDT)	8 A (DPDT), 16 A (SPDT)
Coil Ratings			
Coil Voltage	**AC:** 6, 12, 24, 48, 110, 120, 208, 230, 240, 277V **DC:** 6, 12, 24, 36, 48, 60, 80, 110, 125, 140, 220V	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V
Electrical Ratings			
Dielectric Withstand Voltage	Pole-to-pole: 2000V Contact-to-coil: 2000V Contact-to-frame: 2000V	Pole-to-pole: 1000V Contact-to-coil: 2000V Contact-to-frame: 2000V	Pole-to-pole: 1500V AC Contact-to-coil: 1500V AC Contact-to-frame: 1500V AC
Electric Service Life (cycles)	100 000 minimum	100 000 minimum	100 000 minimum
Reference			
Certifications	CE, cULus, cURus, CSA, Lloyds	CE, cULus, cURus, CSA, Lloyds	CE, UL, UR, CSA
Socket Cat. No(s).	700-HN100, 700-HN101, 700-HN125, 700-HN126, 700-HN204, 700-HN205, 700-HN204, 700-HN205	700-HN103, 700-HN128, 700-HN104	700-HN121, -HN221 700-HN122, -HN222 700-HN223, -HN224
Product Selection	**See page 2-6**	**See page 2-8**	**See page 2-9**

Relays 700-HL, HP

Bulletin	**700-HL**	**700-HL (2-Pole)**	**700-HP**
Type	Terminal Block Relays 1-Pole	Terminal Block Relays 2-Pole	Interposing/Isolation Relay
Features	• Ideal for PLC Interfaces • Built-in Coil Surge Protection • Fully Assembled Relay/Sockets • Standard LED • Relay or Solid-state Output • Optional: Leakage Current Suppression Solution	Ideal for interposing isolation applications, Fully Assembled Relay/Sockets, Standard LED, Screw or Spring Clamp Terminals, Snap-in 1492 Marker Option	• PCB "Pin-Style" mounting • 5 mm pin spacing
Contact Ratings			
Contact Form	SPDT 1 N.O. (SSR)	DPDT	DPDT
Contact Type	Single	Single	Single
Contact Material	AgSnO	AgSnO	AgNi, AgNi + Gold
Max. operating current under resistive load	6 A (SPDT), 2 A (SSR DC output), 1 A (SSR AC output)	10 A	8 A
Coil Ratings			
Coil Voltage	**AC:** 12, 24, 48, 110, 120, 230, 240V **DC:** 12, 24, 48, 125, 230, 240V	**AC:** 24, 110, 120, 230, 240V **DC:** 12, 24, 48, 125, 230, 240V	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V
Electrical Ratings			
Dielectric Withstand Voltage	Pole-to-pole: 1000V AC Contact-to-coil: 4000V Contact-to-frame: 1500V	Pole-to-pole: 1000V AC Contact-to-coil: 5000V Contact-to-frame: 2500V	Pole-to-pole: 2000V Contact-to-coil: 5000V
Electric Service Life (cycles)	100 000 minimum	100 000 minimum	100 000 minimum
Reference			
Certifications	CE, cURus, cULus, ABS	CE, cURus, cULus	CE, cULus, cURus, CSA, Lloyds
Socket Cat. No(s).	—	—	700-HN123, -HN230
Product Selection	**See page 2-10**	**See page 2-11**	**See page 2-12**

Timing Relays 700-FE, FS

Bulletin	**700-FE**	**700-FS**
Type	DIN Rail Timer	DIN Rail Timer
Features	• Only 17.5 mm wide • 5 A contact rating • Multifunction or single function • No additional socket required	• Only 22.5 mm wide • 8 A contact rating • Multifunction or single function • No additional socket required • Optional: • Star-delta timing function • True off-delay timing function • Hazardous location certification
Control Outputs: Time Limit Instantaneous	1 N.O. or SPDT timed	SPDT or DPDT or 2 N.O. + 1 common
Operation Modes:	On-delay Off-delay One shot Repeat cycle-pulse Fleeting off-delay Pulse converter	11 timing modes
Time Range	0.05 s…10 hr	0.05 s…60 hr
Supply Voltage	24V AC/DC 110…240V AC 24…48V AC/DC 24…240V AC	12V DC 24V…48V DC 24V…240V AC
Contact Rating at 120V AC	5 A	8 A
Certifications	CE, cULus	CE, cULus
Product Selection	**See page 2-13**	**See page 2-14**

Control Relays 700-M, 700-CF

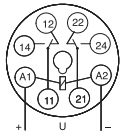
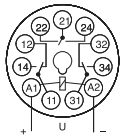
Bulletin	**700-K**	**700-KR**	**700-CF**	**700-CRF**
Type	Miniature Control Relay		Control Relay	
Spring Clamp Terminals	—	✓	—	✓
Screw Terminals	✓	—	✓	—
Features	• Smallest size • Long life • Low power consumption • Switch up to 690V AC and DC		• Mechanically linked contacts • Timer and latch operations • Switch up to 690V AC and DC • Bulletin 700S-CF for safety circuits	
Contact Form	4...8 Poles Double Break		4…12 poles, double break	
Contact Type	Bifurcated		Cross stamp or bifurcated	
Contact Material	Silver		Silver, gold	
Electrical				
Max. Current AC Resistive	10 A		20 A (relay) 10 A (adder deck)	
Min. load	15V, 2 mA (700-K)		17V, 10 mA (Silver) 5V, 3 mA (Gold)	
Coil Voltage	12…600V AC 9…250V DC		12…600V AC 9…250V DC	
Coil Voltage Pickup	85…110% AC Coils, 80…110% DC Coils		85…110% AC coils, 80…110% DC coils	
Dielectric Withstand	2640V		2.5 kV	
Reference				
Electric Service Life (cycles)	800'000 at 10 A		1'200'000 at 10 A	
Certifications	CE, cULus, CCC		CE, cULus, CCC	
Sockets	DIN Rail or panel mount		DIN Rail or panel mount	
Product Selection	**See page 2-17**		**See page 2-19**	

LOGIC

General Purpose Relays 700-HA

- 10 A Contact Rating
- DPDT, 3PDT
- Pin Style Terminals
- Standard ON/OFF Flag Indicator
- Options: LED, Push-to-Test and Manual Override, Socket Mounted Surge Suppressor Module, or Multifunction Timer
- Contact Choices: Standard Silver Nickel, Bifurcated Silver Nickel, or Bifurcated with Gold Plating

Bulletin 700-HA Tube Base Relay with PIN Terminals (Single Contact) — Mechanical ON/OFF Indicator included

Description	Wiring Diagrams	Contact Rating	Coil Voltage	Cat. No. ‡§♣
DPDT 2-pole 2 Form C Single AgNi Contact		10 A B300	24V AC	700-HA32A24
			230V AC	700-HA32A03
			240V AC	700-HA32A2
			24V DC	**700-HA32Z24**
			110V DC	700-HA32Z1
Sockets	*700-HN100, -HN204*		220V DC	700-HA32Z2
3PDT 3-pole 3 Form C Single AgNi Contact		10 A B300	24V AC	700-HA33A24
			230V AC	**700-HA33A03**
			240V AC	**700-HA33A2**
			24V DC	**700-HA33Z24**
			110V DC	700-HA33Z1
Sockets	*700-HN101, -HN205*		220V DC	700-HA33Z2

‡ LED option: Add suffix (**-4**) to the selected Bulletin 700-HA relay cat. no., except for the 240V AC units, add (**-4L**).

§ Push-to-test, manual override, and LED option: Add suffix (**-3-4**) to the selected Bulletin 700-HA relay cat. no., except for the 240V AC units, add (**-3-4L**).

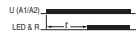
♣ Push-to-test and manual override option: Add suffix (**-3**) to the selected Bulletin 700-HA relay.

Accessories for 700-HA

	Description	PQ	Cat. No.
	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction. 8-Pin for use with DPDT Bulletin 700-HA Relays, -HX Timing Relays, -HT (On-Delay) and -HRM, -HRC and -HV (Repeat Cycle) Timing Relays. Order ten or multiples of ten	10	**700-HN100**
	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Guarded Terminal Construction. 11-pin for use with 3PDT 700-HA relays.	10	**700-HN101**
	8-Pin Socket — Can Be Used With or Without Timing Attachment or Surge Suppressor Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with DPDT Bulletin 700-HA Relays. Order must be for 10 sockets or multiples of 10.	10	**700-HN204**
	11-Pin Socket — Can Be Used With or Without Timing Module or Surge Suppressor. Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with 3PDT Bulletin 700-HA relays.	10	**700-HN205**

PQ = Package Quantity

Accessories for 700-HA, continued

	Description	PQ	Cat. No.
	Diode Surge Suppressor ★ Voltage Range: 6…220V DC used with 700-HN204/205 socket	10	**700-ADR**
	Diode with LED Surge Suppressor ★ Voltage Range: 6…24V DC used with 700-HN204/205 socket	10	**700-ADL1R**
	Varistor with LED Surge Suppressor ★ Voltage Range: 110…240V AC used with 700-HN204/205 socket	10	**700-AV3R**
	RC Surge Suppressor ★ Voltage Range: 6…24V AC/DC used with 700-HN204/205 socket	10	700-AR1
	RC Surge Suppressor ★ Voltage Range: 110…240V AC/DC used with 700-HN204/205 socket	10	**700-AR2**
	Timing Module On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with 700-HN204 and 700-HN205 sockets. On-Delay  One-Shot 	1	700-AT3
	Multi-Function Multi-Range Time Module ★ • Voltage range 12…240V AC 50/60 Hz and 12…240V DC, with a voltage variation of 85…110%. Repeat accuracy of ±1%. Reset time <50 ms. • Choice of 8 functions • Choice of 8 time ranges 0.1…240 h • Use with sockets 700-HN204/205	1	**700-HT3**

★ Suppressors and timing modules easily plug into sockets (Cat. nos. 700-HN204 and 700-HN205). For use with Bulletin 700-HA relays.

PQ = Package Quantity

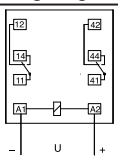
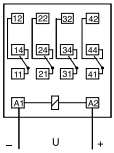
ATTENTION: Cat. No. 700-HT3 is wired with signal “S” connected to “A1”.
See wiring diagram marked on the timer module.

LOGIC

Interposing/Isolation Relays 700-HC

- 10 A Contact Ratings
- 2PDT or 4PDT
- Standard ON/OFF Flag Indicator
- Blade Style Terminals
- Choice of Standard Silver Nickel Contacts, or Silver Nickel with Gold Plated Contacts for Low Energy Applications
- Options: LED, Push-to-Test with Manual Override Option
- Tungsten UL Approvals
  4-Pole: 5A @ 24V DC
  2-Pole: 10A @ 24V DC

Bulletin 700-HC Miniature Square Base with Blade Terminals

Description	Wiring Diagrams	Contact Rating	Coil Voltage	PQ	Cat. No. ★‡
2PDT 2-Pole 2 Form C Contacts: 10 A = AgNi Contacts		10 A C300 R300 Low energy rating; (10V, 10 mA)	24V AC	1	700-HC22A24-3
			240V AC		**700-HC22A2-3**
Sockets	*700-HN103* *700-HN104*		24V DC		**700-HC22Z24-3**
4PDT 4-Pole 4 Form C Contacts: 10A = AgNi Contacts		7 A Low energy rating; (10V, 1 mA)	24V AC	1	**700-HC24A24-3**
			240V AC		**700-HC24A2-3**
Socket	700-HN104		24V DC		**700-HC24Z24-3**
Socket Base				10	**700-HN103**
				10	**700-HN104**

★ LED option: Add suffix **(-4)** to the selected 700-HC relay cat. no. except for the 240V AC units, add **(-4L)**.
‡ Push-to-test and LED option: Add suffix **(-3-4)** to the selected 700-HC relay cat. no., except for the 240V AC units, add **(-3-4L)**.
PQ = Package Quantity

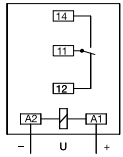
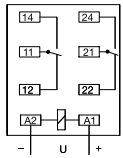
Interposing/Isolation Relays 700-HK

- 8 A/16 A Contact Ratings
- DPDT/SPDT
- Plug-in Blade Style Terminals
- Built-in Retainer Clip in Sockets
- Choice of Standard Silver Cadmium Contacts or Silver with Gold Plated Contacts
- Options: LED, Push-to-Test with Manual Override Option

700-HK SPDT

700-HK DPDT

Slim Line Relay with Plug-in Quick Connect Terminations

Description	Wiring Diagrams	Contact Rating	Coil Voltage	PQ	Cat. No. ★‡§
SPDT 1-Pole 1 Form C AgNi Contacts		16 A	24V AC	1	**700-HK36A24**
			240V AC		**700-HK36A2**
Socket	700-HN121		24V DC		**700-HK36Z24**
DPDT 2-Pole 2 Form C AgNi Contacts		8 A	24V AC	1	**700-HK32A24**
			240V AC		**700-HK32A2**
Socket	700-HN122		24V DC		**700-HK32Z24**
Socket Base				10	**700-HN221**
				10	**700-HN222**

★ LED option: Add suffix (**-4**) to the selected Bulletin 700-HK relay cat. no. except for the 240V AC units, add (**-4L**).

‡ Push-to-test and LED option: Add suffix **(-3-4)** to the selected Bulletin 700-HC relay cat. no., except for the 240V AC units, add **(-3-4L)**.

§ For AgCdO contact with gold overlay: Replace “3” with “X” in cat. no. For example, if cat. no. 700-HK36A1 is required with gold overlay, the new catalog number is 700-HKX6A1.

PQ = Package Quantity

LOGIC

Terminal Block Relays 700-HL, 1-Pole

- Up to 85% panel space savings vs. traditional relays
- DIN rail mounting
- Only 6.2 mm wide (SPDT)
- Standard LED, Reverse Polarity Protection and Surge Protection
- Screw Terminals and Spring Clamp Bases

700-HLT...

700-HLS...

SPDT Relays

Assembled Devices Input Voltage	Output Type	PQ		Cat. No. (Screw Terminals)	Cat. No. (Spring Clamp Terminals)
24V DC	SPDT (1 C/O); I_{th} = 6A★	10	‡Δ	**700-HLT1Z24**	**700-HLT2Z24**
24V AC/DC		10		**700-HLT1U24**	700-HLT2U24
110/125V AC/DC		10	Δ	**700-HLT1U1**	700-HLT2U1
220...240V AC/DC		10		**700-HLT1U2**	700-HLT2U2
Built-in LCSC (leakage current suppression circuit) 120V AC and 125V DC♣		10	‡	700-HLT1L1	
Built-in LCSC (leakage current suppression circuit) 240V AC♣		10	‡	700-HLT1L2	

Solid State

Assembled Devices Input Voltage	Output Type	PQ		Cat. No. (Screw Terminals)	Cat. No. (Spring Clamp Terminals)
24V DC	1 N.O. solid-state; I_{th} = 2 A, 24V DC§	10	‡Δ	**700-HLS1Z24**	**700-HLS2Z24**
220...240V AC/DC		10	‡	700-HLS1U2	700-HLS2U2
Built-in LCSC (leakage current suppression circuit) 120V AC and 125V DC♣		10	‡	700-HLS1L1	
Built-in LCSC (leakage current suppression circuit) 240V AC♣		10	‡	700-HLS1L2	

★ For gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if cat. no. 700-HLT1Z24 is required with gold plating, the new cat. no. is 700-HLT1Z24X.

‡ Electromechanical relay to solid-state relay interchangeability is possible.

§ Reverse polarity on the output terminals of the solid-state relay will result in the output being "On" regardless of the state of the input voltage.

♣ Leakage current suppression up to 2.2 mA off state current.

Δ Available as EX version (for US hazardous locations applications only). Add "-EX" at the end of the cat. no. (Example: 700-HLS1Z24-EX).

PQ = Package Quantity

Terminal Block Relays 700-HL, 2-Pole

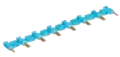
- Slim build of only 14mm wide that meets thedemand for panel space-savings
- Standard built-in reverse DC polarityprotection ensures DC coil devices are notdamaged if improper polarity is connected
- Separation of coil and contact terminals
- Snap in marker system
- One piece housing construction in terminal area to prevent screwdriver blade from catching on housing seam
- 10 Amp Contact Rating

DPDT Relays

Assembled Devices Input Voltage	Output Type	PQ	Cat. No. (Screw Terminals)	Cat. No. (Spring Clamp Terminals)
24V DC	DPDT (2 C/O); I_{th} = 10 A★	10	**700-HLT12Z24**	**700-HLT22Z24**
24V AC/DC		10	**700-HLT12U24**	700-HLT22U24
110/125V AC/DC		10	700-HLT12U1	700-HLT22U1
220…240V AC/DC		10	**700-HLT12U2**	700-HLT22U2

★ For Gold-plated contacts: Add the letter "X" at the end of the catalog number. Example: Cat. No. 700-HLT12Z24 with gold plated contacts is catalog number 700-HLT12Z24X. The following relays are available with the gold-plated contact option: 700-HLT_2Z24, 700-HLT_2U24, 700-HLT_2U1, and 700-HLT_2U2.

Accessories for Terminal Block Relays

	Description		For Use With	PQ		Cat. No.
	Replacement Relays Order multiples of 20.	24V AC/DC	700-HL (1-Pole)	20		**700-TBR24**
		110/125V AC/DC 220…240V AC/DC				**700-TBR60**
	Replacement SSR 4-blade miniature relay for use with 1 N.O. SSR DC output. Order multiples of 20.	24V DC	700-HL (1-Pole)	20		**700-TBS24**
		48V DC, 110/125V AC/DC 220…240V AC/DC				700-TBS60
	Replacement Relays Order must be for 20 relays or multiples of 20.	48V DC	700-HL (2-Pole)	20		700-TBR248
		110/125V AC/DC 220…240V AC/DC				700-TBR2110
	20-Way Jumper Can be cut to required length. I_{th} = 36 A max per 20-way jumper.	Red	700-HL (1-Pole)	1		**700-TBJ20R**
		Grey				**700-TBJ20G**
		Blue				**700-TBJ20B**
	**8-Way Jumper** Can be cut to required length. I_{th} = 10 A max per 8-way jumper.	Red	700-HL (2-Pole)	1		700-TBJ08R
		Grey				700-TBJ08G
		Blue				700-TBJ08B

★ For gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-TBR24 is required with gold plating, the new cat. no. is 700-TBR24X. Gold-plated contacts with surcharge.

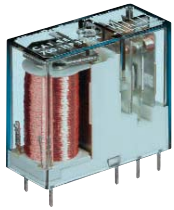
‡ Go to http://www.ab.com/software/termblock/index.html and download software. Create custom text, save file, and e-mail to your local Rockwell Automation office.

Note: Terminal block relay bases are not sold separately.

PQ = Package Quantity

LOGIC

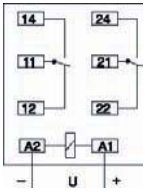
"Pin Style" Relays 700-HP (PCB)



- 8 A Contact Ratings
- DPDT/ (2 c/o) Contacts
- Plug-in PIN Style (PCB) Terminals (5 mm Pinning)
- Choice of Standard Silver Nickel Contacts, or Silver Nickel with Gold Plated Contacts

Options: None

Slim Line Relay with "PIN Style" Terminations

Description	Wiring Diagram	Contact Rating	Coil Voltage	PQ	Cat. No.
DPDT 2-Pole 2 Form C AgNi + Au Gold Plated Contacts		8 A	24V AC	10	700-HPX2A24
			240V AC	10	700-HPX2A2
			24V DC	10	700-HPX2Z24
DPDT 2-Pole 2 Form C AgNi Contacts			24V AC	10	**700-HP32A24**
			240V AC	10	**700-HP32A2**
Socket	700-HN123		24V DC	10	**700-HP32Z24**

PQ = Package Quantity

Accessories

	Description	PQ	Cat. No.
	Diode Surge Suppressor ★ Voltage Range: 6…220V DC used with 700-HN204/205 socket	10	**700-ADR**
	Diode with LED Surge Suppressor ★ Voltage Range: 6…24V DC used with 700-HN204/205 socket	10	**700-ADL1R**
	Varistor with LED Surge Suppressor ★ Voltage Range: 110…240V AC used with 700-HN204/205 socket	10	**700-AV3R**
	RC Surge Suppressor ★ Voltage Range: 6…24V AC/DC used with 700-HN204/205 socket	10	700-AR1
	RC Surge Suppressor ★ Voltage Range: 110…240V AC/DC used with 700-HN204/205 socket	10	**700-AR2**
	Timing Module On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with 700-HN204 and 700-HN205 sockets. On-Delay One-Shot 	1	700-AT3
	Screw Terminal Socket — Panel or DIN Rail Mounting 8-pin miniature socket for use with 2-pole, Bulletin 700-HP relays. Incorporates coil and contact separation.	10	**700-HN123**

PQ = Package Quantity

Economy Timing Relays 700-FE

- Adjustable Function and Timing Range Timing Relays
- DIN Rail Mounted Without Cost of Socket
- 17.5 mm wide, Multi-Function or Single Function
- Available as 1 N.O. or SPDT Contact Output, 5A
- Timing Ranges From 0.05s…10.0h

Single-Function

This device offers you one specific timing function.

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
ON-delay	1 N.O.	0.05 s…10 hr (6 settings) ♣	24V AC/DC ★ 110…240V AC 50/60 Hz	**700-FEA1TU22**
	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEA3TU23**
OFF-delay	1 N.O.	0.05 s…10 hr (6 settings) ♣	24V AC/DC ★ 110…240V AC 50/60 Hz	**700-FEB1TU22**
	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEB3TU23**
One Shot	1 N.O.	0.05 s…10 hr (6 settings) ♣	24V AC/DC ★ 110…240V AC 50/60 Hz	**700-FED1TU22**
	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FED3TU23**
Fleeting OFF-delay	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEE3TU23**
Flasher (repeat cycle starting with pulse)	1 N.O.	0.05 s…10 hr (6 settings) ♣	24V AC/DC ★ 110…240V AC 50/60 Hz	**700-FEF1TU22**
	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEF3TU23**
Pulse Converter	SPDT (1 C/O)	0.05 s…10 hr (6 settings) §	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEL3TU23

★ Voltage is either 24V AC 50/60 Hz or 24V DC.
§ Time ranges: 0.05 s…1 s, 0.5…10 s, 0.05…1 min., 0.5…10 min, 0.05…1 h, 0.5…10 h.
♣ Time ranges: 0.75…15 s, 3…60 s, 0.4…8 min., 3…60 min.

Multi-Function

This device offers you the flexibility of selecting one of 4 single timing functions.

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
ON-delay, OFF-delay, One Shot, Flasher (repeat cycle starting with pulse)	1 N.O.	0.05 s…10 hr (6 settings) ‡	24V AC/DC ★ 110…240V AC 50/60 Hz	700-FEM1RU22
	SPDT (1 C/O)	0.05 s…10 hr (6 settings) ‡	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEM3TU23**

★ Voltage is either 24V AC or 24V DC 50/60 Hz.
‡ Time ranges: 0.5 s…10 s, 3…60 s, 0.5 s…10 min., 3…60 min.

Special Functions

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
Star-Delta	2 N.O. with 1 Common	0.15 s…10 min (4 settings) Δ	24V…48V AC/DC 24…240V AC 50/60 Hz	**700-FEY2QU23**

Δ Time ranges: (3s) 0.15…3 s, (10s) 0.5…10 s, (1m) 0.05…1 min, (10m) 0.5…10 min

Electronic High Performance Timing Relays 700-FS

- Adjustable Function and Timing Range Timing Relays
- DIN Rail Mounted without Cost of Socket
- 22.5 mm Wide Multifunction or Single Functions
- Available as SPDT or DPDT Contact Output, 8 A
- Timing Ranges From 0.05s…60h

Single Function (With SPDT 1 C/O contact)

Operating Mode	Timing Range	Input Voltage	Cat. No.
On-delay	0.05 s…60 h	24…48V DC 24…240V AC, 50/60 Hz	**700-FSA3UU23**
	0.05…1 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSA3AU23
	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	**700-FSA3CU23**
	0.5…10 min	24…48V DC 24…240V AC, 50/60 Hz	**700-FSA3GU23**
Off-delay	0.05 s…60 hr	24…48V DC 24…240V AC, 50/60 Hz	**700-FSB3UU23**
	0.05…1 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSB3AU23
	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSB3CU23
	0.5…10 min	24…48V DC 24…240V AC, 50/60 Hz	700-FSB3GU23
On- and off-delay	0.05…1 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSC3AU23
	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSC3CU23
One shot	0.05…1 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSD3AU23
	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSD3CU23
Fleeting Off-delay	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSE3CU23
Flasher (repeat cycle starts with pulse)	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	700-FSF3CU23
One shot/watch dog (pulse controlled)	0.5…10 s	24…48V DC 24…240V AC, 50/60 Hz	**700-FSK3CU23**

Single Function (With DPDT 2 C/O contacts)

Operating Mode	Timing Range	Input Voltage	Cat. No.
On-delay	0.05 s…60 hr ‡	24…48V DC 24…240V AC, 50/60 Hz	**700-FSA4UU23**
Off-delay	0.05 s…60 hr ‡	24…48V DC 24…240V AC, 50/60 Hz	**700-FSB4UU23**

‡ The timing range of "0.05 s…60 h" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

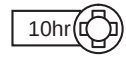
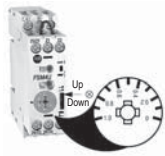
Multi-Function Relays

(This device offers you the flexibility of selecting one of 8 single timing functions.)

700-FSM

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
Multi-function timing relays Eight Single-functions: A, B, C, D, E, F, I, and L ON and OFF function additional (for installation and maintenance) Note: See connection diagrams for further description.	(SPDT) 1 C/O	0.05 s…60 hr ★	24…48V DC 24…240V AC 50/60 Hz	**700-FSM3UU23**
		0.05 s…60 h ★	24…240V AC/DC	**700-FSM3UU18**
		0.05 s…60 h ★	346…440V AC 50/60 Hz	**700-FSM3UA40**
	(DPDT) 2 C/O	0.05 s…60 hr ★	24…48V DC 24…240V AC 50/60 Hz	**700-FSM4UU23**
		0.05 s…60 h ★	24…240V AC/DC	**700-FSM4UU18**

Multi-Function Timing Relay Function and Time Range Settings

Description	SPDT	DPDT
Multi-function timing relays 700-FSM3U includes 10 setting functions:		**Multi-Time Setting Range 0.05 s…60 h** 
	(A) On-Delay (B) Off-Delay (C) On- and Off-Delay (D) One shot (E) Fleeting Off-Delay (F) Flasher (repeat cycle starts with pulse) (I) On-Delay pulse generator (L) Pulse converter (On) ON-Function ‡ (Off) OFF-Function ‡ **Note**: Switch ⊗ is on DPDT relays only. When switch is down, one contact is instantaneous and one is timed. When switch is up, both contacts are timed.	(1 s) 0.05…1 s (3 s) 0.15…3 s (10 s) 0.5…10 s (1 min) 0.05…1 min (3 min) 0.15…3 min (10 min) 0.5…10 min (1 h) 0.05…1 h (3 h) 0.15…3 h (10 h) 0.5…10 h (60 h) 3.…60 h

★ The time range of "0.05 s…60 h" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

‡ For installation and maintenance.

Special Function Relays

700-FSH

700-FSY

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
Flasher (Repeat Cycle Starting with Pulse or Pause)	(SPDT) 1 C/O	0.05 s…60 h ★	24…48V DC 24…240V AC 50/60 Hz	700-FSH3UU23
		2 x 0.05 s…60 h (2 ranges)	24…48V DC 24…240V AC, 50/60 Hz	**700-FSH3VU23**
OFF-delay without supply voltages (True OFF-delay) §	(SPDT) 1 C/O	0.15 s…10 min ‡	24…240V DC 24…240V AC 50/60 Hz	700-FSQ3QU18
OFF-delay without supply voltages (True OFF-delay) §	(DPDT) 2 C/O			**700-FSQ4QU18**
Star-Delta	2 N.O. + 1 Common	0.5 s…10 s	24...48V DC 24...240V AC 50/60 Hz	**700-FSY2CU23**
		1.5…30 s		**700-FSY2DU23**
		0.05 s…1 min		**700-FSY2EU23**
		0.15…3 min		700-FSY2FU23
		0.5…10 min		700-FSY2GU23
		0.5 s…10 s	346…440V AC 50/60 Hz	700-FSY2CA40
		1.5…30 s		**700-FSY2DA40**
		0.05 s…1 min.		700-FSY2EA40
		0.15…3 min.		700-FSY2FA40

★ The timing range of "0.05 s…60 h" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

‡ This timing range is selectable in four smaller ranges: 0.15 s…2.5 s, 0.5 s…10 s, 4 s…80 s, 30 s…10 min.

§ Due to shock during shipment, the state of the contacts should be verified before initial use.

Miniature Control Relays 700-K

- IEC Compact Industrial Relay
- IP2X Finger Protection
- Bifurcated Contacts for low level signals
- Optional integrated coil protection diode

700-K

700-KR

AC / DC Coil Voltage Control Relays

AC-12		AC-15 (A600)					Contacts		PQ	
I_e [A]		I_e [A]								
40 °C	60 °C	24/48V	230V	400V	500V	690V	N.O.	N.C.	★	Cat. No.
Screw Terminals										
10	6	3	2	1	1	0.6	4	0	1	**700-K40E-⊗**
							3	1	1	**700-K31Z-⊗**
							2	2	1	**700-K22Z-⊗**
							1+1L‡	1+1L‡	1	**700-KL22Z-⊗**
Spring Clamp Terminals										
10	6	3	2	1	1	0.6	4	0	1	700-KR40E-⊗
							3	1	1	700-KR31Z-⊗
							2	2	1	700-KR22Z-⊗
							1+1L‡	1+1L‡	1	700-KRL22Z-⊗

★ May be ordered in package quantities of 20. Add letter M to the end of the cat. no. Example: **700-K40E-KFM**.
‡ 1L = Late break N.C./early make N.O.
⊗ The Cat. No. as listed is incomplete. Select a standard Coil Voltage Code from the table below to complete the Cat. No. Example: 230V, 50/60 Hz: Cat. No. **700-K40E-⊗** becomes Cat. No. **700-K40E-KF**.

⊗ Coil Voltage Codes for AC and DC Control

AC Control	
Code	Description
KJ	24V 50/60 Hz
KY	48V 50/60 Hz
D	110V 50 Hz
KF	230V 50/60 Hz
KN	400V 50/60 Hz

DC Control	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
ZD	110V DC
ZA	220V DC

For other voltages visit our website or consult your local sales office.

Accessories 700-K / 700-KR

	Description	N.O.	N.C.	For Use With	Cat. No. ★
Screw Terminals					
	Front-mounted auxiliary contacts • Auxiliary Contact Blocks • 2- and 4-pole versions • Choice of contact configurations • Snap on, no tools required • Electronic-compatible bifurcated contacts for signals down to 15V/2 mA	0	2	100/104-K, 700-K	**100-KFA02E**
		1	1		**100-KFA11E**
		2	0		**100-KFA20E**
		0	4		**100-KFA04E**
		1	3		**100-KFA13E**
		2	2		**100-KFA22Z**
		3	1		**100-KFA31Z**
		4	0		**100-KFA40E**
Spring Clamp Terminals					
	Front-mounted auxiliary contacts Auxiliary Contact Blocks 2- and 4-pole versions Choice of contact configurations Snap on, no tools required Electronic-compatible bifurcated contacts for signals down to 15V/2 mA	0	2	100/104-KR, 700-KR	**100-KRFA02E**
		1	1		**100-KRFA11E**
		2	0		**100-KRFA20E**
		4	0		**100-KRFA04E**
		1	3		**100-KRFA13E**
		2	2		**100-KRFA22Z**
		3	1		**100-KRFA31Z**
		4	0		**100-KRFA40E**

	Description		For Use With	Cat. No. ★
	Surge Suppressor • Plug-in type • Limits surge voltage on coil drop-off	**RC Suppressor**		
		24…48V AC	100/104-K/-KR, 700-K/-KR	**100-KFSC50**
		110…280V AC		**100-KFSC280**
		380…480V AC		100-KFSC480
		MOV Suppressor		
		12…55V AC, 12…77V DC	100/104-K/-KR, 700-K/-KR	**100-KFSV55**
		56…136V AC, 78…180V DC		**100-KFSV136**
		137…277V AC, 181…250V DC		**100-KFSV277**
		Diode Suppressor		
		12…250V DC	100/104-K/-KR, 700-K/-KR	**100-KFSD250**

★ May be ordered in package quantities of 10. Add letter M to the end of the cat. no. Example: **100-KFA02EM**
For Mechanical Interlock see accessories 100-K page 1-30

Control Relays 700-CF / 700-CRF

- IEC Industrial Relays (Finger Safe Design)
- Positively-Guided/Mechanically-Linked Contacts per IEC 60947-5-1 Annex L on Main and Auxiliary Contacts
- Gold Plated, Bifurcated Version for Low Level Switching Applications
- Master Control Relay Version rated 15 A (AC-15)
- Solid-State and Pneumatic Timing Modules
- 4…10 Poles
- 12…600V Coils

700-CF

700-CRF

4-Pole AC / DC Coil Voltage

AC-12		AC-15			Contacts			Standard Auxiliary Contact	Bifurcated Auxiliary Contact
I_{th} [A]		I_{th} [A]							
40 °C	60 °C	240V	400V	525V	N.O.	N.C.		Cat. No.	Cat. No.
Screw Terminals									
20	20	10	6	2.5	2	2	★	**700-CF220⊗**	700-CFB220⊗
					3	1	★	**700-CF310⊗**	700-CFB310⊗
					4	0	★	**700-CF400⊗**	700-CFB400⊗
Spring Clamp Terminals									
20	20	10	6	2.5	2	2	★	700-CRF220⊗	—
					3	1	★	700-CRF310⊗	—
					4	0	★	700-CRF400⊗	—

⊗ The cat. no. as listed is incomplete. Select a coil voltage code from the table below.
★ May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. Example: **700-CF220KFM**).

⊗ Coil Voltage Codes for AC and DC Control

AC Control	
Code	Description
KJ	24V 50/60 Hz
KY	48V 50/60 Hz
KD	110V 50/60 Hz
KF	230V 50/60 Hz
KN	400V 50/60 Hz

DC Control	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
EJ	24V DC electronic coil ‡
ED	110V DC electronic coil ‡
EA	220V DC electronic coil ‡

For other voltages visit our website or consult your local sales office.
‡ Extended range. For technical details refer to publication A117.

LOGIC

Auxiliary Contacts for 700-CF, 700-CRF ★

	Description	N.O.	N.C.	For Use With		Cat. No.
Screw Terminals						
	Auxiliary Contact Blocks for Front Mounting • 2- and 4-pole • Quick and easy mounting without tools • Electronically-compatible contacts down to 17V, 5 mA • Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types) • Models with equal function with several terminal numbering choices • 1L = Late break N.C./early make N.O. • Bifurcated versions for switchingdown to 5V, 3 mA also available §	0	2	700-CF	‡	**100-FA02**
		1	1		‡	**100-FA11**
		2	0		‡	**100-FA20**
		2	2		‡	**100-FA22**
		3	1		‡	**100-FA31**
		4	0		‡	**100-FA40**
		1+1L	1+1L		‡	**100-FAL22**
Spring Clamp Terminals						
	Auxiliary Contact Blocks for Front Mounting • 2- and 4-pole • Quick and easy mounting without tools • Electronic-compatible contacts down to 17V, 5 mA • Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types) • Models with equal function with several terminal numbering choices • 1L = Late break N.C./early make N.O. §	0	2	700-CRF		100-CRFA02
		1	1			100-CRFA11
		2	0			100-CRFA20
		2	2			100-CRFA22
		3	1			100-CRFA31
		4	0			100-CRFA40
		1+1L	1+1L			100-CRFAL22

★ Max. number of auxiliary contacts that may be mounted:
AC coil contactors — max. 4 N.O. contacts on the front of the contactor, 2 N.O. contacts on the side, 4 N.C. front or side, 6 total.
DC coil contactors — max. 4 N.O. contacts on the front of the contactor or max 2 N.O. contacts on the side, 4 N.C. front or side, 4 total.

‡ May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. (Example: **100-FA02M**).

§ Selection data, see catalog A117 or consult your local sales office.

Additional Accessories for 700-CF, 700-CRF see page 1-33

Solid State Devices 700-SH

Bulletin	700-SH
Type	Hockey Puck
Features	Panel/DIN Mount, High Current, Protective Cover, LED Status
Load Type	AC (47…63 Hz) 3…60V DC
Load Voltage Range	3…50V DC, 24…265V AC 42…530V AC, 42…265V AC, 42…660V AC
Load Current Max. (Continuous)	10 A/100 A ★
Max Leakage Current to Load	<3 mA
Zero Cross Load Switching	Yes
Equivalent Electromechanical Relay Contact Arrangement	1 N.O. Form A
Rated Control (Input) Voltage	3…32V DC, 4…32V DC, 80…130V AC, 20…260V AC 20…280V AC/22…48V DC
LED Indicator	Yes
Mounting Method	Panel without heat sink, Panel or DIN with heat sink
Dielectric Strength	>4000V AC RMS
Certification	cURus, CE , CSA
Max. Ambient Operating Temperature	-20…70 °C (no condensation)
Product Selection	**See page 2-22**

LOGIC

Hockey Puck Relays for DIN Rail Mounting 700-SH

- 100 A max. continuous load (output) current with appropriate heat sink
- 264V AC, 530V AC, or 660V AC max. load voltage options
- 3…32V DC, 4…32V DC, 80…130V AC, 200…260V AC, 20…280V AC/22…48V DC Control (Input) Voltage Options
- LED indicator for input/logic ON/OFF status monitoring
- Protective cover for added safety

Input-to-Output Isolation Method	Zero Cross Function	Status Indicator	Output (Load) Max. Continuous Current and Rated Voltage Range ★	Rated Input Control Voltage	Cat. No.
Optocoupler	Yes	Yes	10 A @ 42…265V AC	3…32V DC	**700-SH10JZ24**
				200…260V AC	700-SH10JA22
			10 A @ 42…530V AC	4…32V DC	**700-SH10HZ25**
			25 A @ 42…530V AC		700-SH25HZ25
			25 A @ 24…265V AC	3…32V DC	**700-SH25GZ24**
				20…280V AC/22…48V DC	700-SH25GA24
			50 A @ 24…265V AC	3…32V DC	700-SH50GZ24
				20…280V AC/22…48V DC	700-SH50GA24
			50 A @ 42…530V AC	4…32V DC	700-SH50HZ25
			25 A @ 42…660V AC		700-SH25VZ25
				20…280V AC/22…48V DC	700-SH25VA24
			50 A @ 42…660V AC	4…32V DC	700-SH50VZ25
				20…280V AC/22…48V DC	700-SH50VA24
			75 A @ 42…530V AC	4…32V DC	700-SH75HZ25
			75 A @ 42…660V AC		700-SH75VZ25
			75 A @ 42…530V AC	20…280V AC/22…48V DC	700-SH75HA24
			75 A @ 42…660V AC		700-SH75VA24
			100 A @ 42…530V AC	4…32V DC	700-SH100HZ25
				20…280V AC/22…48V DC	700-SH100HA24
			100 A @ 42…660V AC	4…32V DC	700-SH100VZ25
				20…280V AC/22…48V DC	700-SH100VA24
	DC	No	5A @ 3...60V DC	3…32V DC	700-SH5FZ24
	Analog‡	Yes	25 A @ 90…280V AC	4…20 mA DC	700-SH25WA25
			50 A @ 90…280V AC		700-SH50WA25

★ This type is also called Phase Angle 0 when used with heat sink.

Accessories

	Description	Cat. No.
	Heat Sink— Panel or DIN Rail Mount★	700-SN10
		700-SN25
		700-SN50HC

★ For information regarding selection of the proper heat sink for your application, refer to "Heat Sink Size Vs. Load Current" graph or "Load Current Vs. Ambient Temperature Characteristics" and for additional heat sink information refer to pub. 700-AT001*, "Solid-State Relay Application Guide".

Temperature Controllers 900-TC

Bulletin	**900-TC8**	**900-TC16**	**900-TC32**
Dimensions: Height Width Depth	 96 mm 48 mm 78 mm	 48 mm 48 mm 78 mm	 24 mm 48 mm 100 mm
Sample Rate	250 or 500 ms		500 ms
Indication Accuracy	±0.5% PV ±1 digit max.		
Heating/Cooling Control Mode	✓	✓	✓
Control Method	ON/OFF or 2-PID (auto-tune and self-tune) with time proportioning ON/OFF output		
Inputs	• Thermocouple Input • Platinum Resistance Temperature Sensor • Analog Input 0…20 mA, 4…20 mA / 1…5V DC, 0…5V DC, 0…10V DC, 0…50mV DC ★ • Non-Contact Temperature Sensor		
Control Output 1	• Relay Output (electromechanical) • Voltage Output for Solid-State Relay • Triac Output (AC only) • Analog Output 4…20 mA and 0…20 mA		• Relay Output (electromechanical) • Voltage Output for Solid-State Relay
Control Output 2	• Voltage Output for Solid-State Relay • Triac Output (AC only)	• Voltage Output for Solid-State Relay (with option unit)	—
Max. Number of Alarms	3	2 (with option unit)	1
RS-232C Communications Function	✓ (with option unit)	—	—
RS-485 Communications Function	✓ (with option unit)	✓ (with option unit)	✓
Event Input	✓ (with option unit)	✓ (with option unit)	—
Run/Stop via Keypad or Interrupts	✓	✓	Keypad
Multiple SP Selection via Keypad or Interrupts	✓	✓	Keypad
Heater Burnout and Heater Short Alarm	✓	✓	—
Product Selection	**See Publication 900-SG001… or visit our website: www.ab.com/catalogs**		

★ 900-TC32 only available with 0…50 mV DC.

Bulletin	2080		
Type	**Micro810**		
	12 pt	20 pt ★	26 pt ★
Base Unit ★			
Power Supply	Embedded 120/240 AC and 12/24 DC options via AC and DC Power Supply Modules		
Base Programming Port	Embedded USB 2.0 (non-isolated) Standard USB printer cable. ‡		
Base Serial Port	None	RS-232 / 485 non-isolated	
Base Unit Plug-In Slots	0	1	2
Base 100KHz Motion Axis or HSC max.	No Motion Support		
I/O			
Base Digital I/O (In/Out)	12 (8/4)	20 (12/8)	26 (16/10)
Base Analog I/O Channels	Four of 24V DC digital inputs can be configured as 0-10V Analog inputs		
Expansion I/O Modules	None		
Additional Functions (Plug-In Modules)			
DeviceNet Master/Slave	—	Slave only	
Isolated RS232/485	—	Via Plug-In	
2/4-ch Analog	—	Via Plug-In	
RTD/TC	—	Via Plug-In	
Trim Potentiometer	—	Via Plug-In	
Back-up Memory Module	—	No	
Higher speed PTO/HSC	—	No	
High Precision Real-Time Clock	—	Via Plug-In	
Embedded Real-Time Clock	Yes		
LCD	Optional 1.5" Local or (IP 65 3" Remote ★)		
Programming			
Software	Connected Components Workbench		
Program Steps (or instructions)	2K	4K	
Data (bytes)	4K	8K	
IEC 61131-3 Languages	Ladder Diagram, Function Block, Structured Text		
User Defined Function Blocks	Yes		
Motion Instructions	No		
Floating Point Math	32-bit and 64-bit		
Recipe Management/Data Log	No		
Run-time Download	No		
Embedded Serial Port Protocols	N/A	Modbus Master/Slave, ASCII/Binary, DSI	
Certifications	UL/cUL Cl 1DIV2, CE, Marine, C-Tick		
Product Selection	**Page 2-27**		

★ Contact your local Rockwell Automation sales office or Allen-Bradley distributor for availability
‡ Recipe memory size is subtracted from the available data logging memory size

Bulletin	2080					
Type	**Micro830**				**Micro850 ‡**	
	10 pt	16 pt	24 pt	48 pt	24 pt	48 pt
Base Unit ★						
Power Supply	Base Unit has embedded 24V DC Power Supply Optional External 120/240V AC, 12V DC/24V AC power supply					
Base Programming Port	Embedded USB 2.0 (non-isolated) Standard USB printer cable					
Base Serial Port	RS-232/485 non-isolated					
Base EtherNet/IP Port	No				Yes	
Base Unit Plug-In Slots	2	2	3	5	3	5
Base 100KHz Motion Axis or HSC max	1 Axis/ 2 HSC		2 Axis/ 4 HSC	3 Axis/ 6 HSC	2 Axis/ 4 HSC	3 Axis/ 6 HSC
I/O						
Base Digital I/O (In/Out)	10 (6/4)	16 (10/6)	24 (14/10)	48 (28/20)	24 (14/10)	48 (28/20)
Base Analog I/O Channels	Via Plug-In Modules					
Expansion I/O Modules	No				Yes	
Total number of I/O	Base + Plug-In + Expansion I/O = 132					
Additional Functions (Plug-In Modules)						
DeviceNet Master/Slave ★	Master (1 Max) and Slave					
Isolated RS232/485	Via Plug-In					
2/4-ch Analog	Via Plug-In					
RTD/TC	Via Plug-In					
Trim Potentiometer	Via Plug-In					
Back-up Memory Module	Via Plug-In					
High speed PTO/HSC ★	Via Plug-In					
High Precision Real-Time Clock	Via Plug-In					
Embedded Real-Time Clock	No					
LCD ★	No					
Programming						
Software	Connected Components Workbench					
Program Steps (or instructions)	4K		10K		10K	
Data (bytes)	8K		20K		20K	
IEC 61131-3 Languages	Ladder Diagram, Function Block, Structured Text					
User Defined Function Blocks	Yes					
Motion Instructions ★	PLCopen Motion Instruction Set Positioning Only (Home, Relative and Absolute Move, etc.)					
Floating Point Math	32-bit and 64-bit					
Recipe Management/Data Log	32/64 kB §		64 KB/128KB §		64 KB/128KB §	
Run-time Download ★	Yes					
Embedded Serial Port Protocols	Modbus Master/Slave, ASCII/Binary, DSI					
Certifications	UL/cUL Cl 1DIV2, CE, Marine, C-Tick					
Product Selection	**Page 2-28**					

★ Contact your local Rockwell Automation sales office or Allen-Bradley distributor for availability
§ The Micro810, 12pt Micro PLC requires an adapter plug.
‡ Micro850 - Available from Summer 2012

Programmable Controllers

Product Line Overview

Bulletin	1763	1766
Type	**MicroLogix 1100**	**MicroLogix 1400**
Memory		
User Program/Data Space	4K / 4K	10K/10K configurable
Data Logging/Recipe Storage	128k bytes / 64k bytes	128kB/★ Recipe: up to 64kB
Back-up Memory Module	✓	✓
Battery Back-up	✓	✓
I/O		
Up to 32	With embedded I/O modules	Embedded
Up to 128	Up to 80 I/O with embedded I/O modules	Embedded w/Loc. Exp. up to 144
Additional Functionality		
Analog	2 embedded Analog Inputs 0…10V	Embedded
Trim Potentiometers	2 digital	2 digital
PID	✓	✓
High-Speed Counter (24V DC input)	1 @ 40 kHz	Up to 6 @ 100 kHz
Real Time Clock	✓	✓
Simple Motion: Pulse Width Modulated/Pulse Train Outp.	2 @ 40 kHz	3 PTO @ 100 kHz/ PWM @ 40 kHz
Single Axis Servo Control	Through embedded PTO	Through embedded PTO
Data Access Tool	Embedded LCD	Embedded LCD
Floating Point Math	✓	✓
Programming Software		
Windows® - RSLogix 500 & RSLogix 500 Starter	✓ and RSLogix Micro	✓ and RSLogix Micro
Communications		
Online Editing	✓	—
RS-232 Ports	(1) - 8-pin Mini DIN (combo with RS-485 port)	(1) 9-pin D-Shell (1) 8-pin Mini DIN (isolated - combo with RS-485 port)
RS-485 Ports	(1) - 8-pin Mini DIN (combo with RS-232 port)	(1) - 8-pin Mini DIN (isolated - combo with RS-232 port)
DeviceNet Peer to Peer/Slave	With 1761-NET-DNI	With 1761-NET-DNI
Ethernet	Built-in 10/100 Mbps EtherNet/IP Port	Built-in 10/100 Mbps EtherNet/IP Port
DH-485	With 1761-NET-AIC	Directly from combo port or using 1761-NET-AIC
DF1 Half-Duplex Master/Slave	✓	✓
SCADA RTU	Master/Slave	—
Modbus RTU	Master/Slave	Master/Slave
ASCII	✓	✓
Operating Power	120/240V AC / 24V DC / 12…24V DC	120/240V AC / 24V DC
Standards/Approvals	UL, CSA or C-UL, CE, Class I Div. 2	cULus Listed, CE, Class I Div. 2
Product Selection	**See page 2-30**	**See page 2-31**

★ Recipe memory size is subtracted from the available data logging memory size

Micro810

- Functions as a smart relay with high current relay outputs with the programming capabilities of a micro PLC
- Nano-sized footprint
- As part of the Micro800 family, the Micro810 controller shares programming environment, plug-ins and accessories
- 12-pt form factor provides:
  - 2 of the 8 A outputs eliminate the need for external relays
  - Program download via USB programming port (adapter required)
  - DC models allow 4 inputs to function as 0...10V analog inputs
  - Optional 1.5" local LCD for monitoring/modifying application data (variables). It also functions as memory back up module
  - Configure and run core smart relay function blocks without programming (LCD required)
- 20-pt form factor and 26-pt form factor additionally have:
  - Embedded non-isolated serial port for HMI and communications to other devices
  - Up to 2 plug-In slots for adding analog I/O, serial port, etc.

Smart Relay Micro PLC

Line Power	Inputs	Outputs	Cat. No.
24V DC	(4) 24V DC, (4) 24V DC (configurable as analog)	(4) Relay	**2080-LC10-12QWB**
120/240V AC	(8) 120/240V AC	(4) Relay	**2080-LC10-12AWA**
24V DC	(4) 24V DC, (4) 24V DC (configurable as analog)	(4) 24V Source DC	**2080-LC10-12QBB**
12V DC	(4) 12V DC, (4) 12V DC (configurable as analog)	(4) Relay	**2080-LC10-12DWD**

LOGIC

Micro830

- Designed for standalone machine control applications which require simple motion, flexible communications and I/O capabilities with up to five plug-ins
- Different controller types sharing same form factor and accessories
- Form factor based on number of I/O points embedded in the base: 10, 16, 24, or 48
- Controllers include built-in support for up to 3 axes of motion ★
  - As many as three Pulse Train Outputs (PTO)
  - As many as six High-Speed Counter inputs (HSC)
  - 100 kHz speed of PTO and HSC available on 24V DC models
  - Single axis moves supported via PLCopen Motion instructions
  - Home, Stop, MoveRelative, MoveAbsolute, MoveVelocity
- Servo drives configuration (Kinetix 3 and Kinetix 300) is performed using the same software ★
- Use motion plug-in modules to increase performance and extend number of controllable axes (as many as four axes) ★
- Embedded Communications
  - USB programming
  - Non-isolated serial port (RS232/485)

Economical Micro PLC with Simple Motion

Line Power	Inputs	Outputs	High Speed I/O	Cat. No.
24V DC	(2) Normal 24V DC, (4) Fast 24V DC	(4) Relay	(4) 100 k Hz Input	**2080-LC30-10QWB**
24V DC	(2) Normal 24V DC, (4) Fast 24V DC	(2) Normal 24V DC Sink, (2) Fast 24V DC Sink	(4) 100 kHz Input, (2) 100 kHz Output	**2080-LC30-10QVB**
24V DC	(10) 120V AC	(6) Relay	—	**2080-LC30-16AWB**
24V DC	(6) Normal 24V DC, (4) Fast 24V DC	(4) Normal 24V DC Sink, (2) Fast 24V DC Sink	(4) 100 kHz Input, (2) 100 kHz Output	**2080-LC30-16QVB**
24V DC	(6) Normal 24V DC, (4) Fast 24V DC	(6) Relay	(4) 100 kHz Input	**2080-LC30-16QWB**
24V DC	(6) Normal 24V DC, (8) Fast 24V DC	(8) Normal 24V DC Source, (2) Fast 24V DC Source	(8) 100 kHz Input (2) 100 kHz Output	**2080-LC30-24QBB**
24V DC	(6) Normal 24V DC, (8) Fast 24V DC	(8) Normal 24V DC Sink, (2) Fast 24V DC Sink	(8) 100 kHz Input, (2) 100 kHz Output	**2080-LC30-24QVB**
24V DC	(6) Normal 24V DC, (8) Fast 24V DC	(10) Relay	(8) 100 kHz Input, (2) 100 kHz Output	**2080-LC30-24QWB**
24V DC	(28) 120V AC	(20) Relay	—	**2080-LC30-48AWB**
24V DC	(16) Normal 24V DC, (12) Fast 24V DC	(16) Normal 24V DC Source, (4) Fast 24V DC Source	(12) 100 kHz Input, (4) 100 kHz Output	**2080-LC30-48QBB**
24V DC	(16) Normal 24V DC, (12) Fast 24V DC	(16) Normal 24V DC Sink, (4) Fast 24V DC Sink	(12) 100 k Hz Input, (4) 100 k Hz Output	**2080-LC30-48QVB**
24V DC	(16) Normal 24V DC, (12) Fast 24V DC	(20) Relay	(12) 100 k Hz Input	**2080-LC30-48QWB**

★ Contact your local Rockwell Automation sales office or Allen-Bradley distributor for availability

Micro800 Plug-In Modules

- Extend the functionality of embedded I/O without increasing the footprint of your controller.
- Improve performance by adding additional processing power or capabilities.
- Add additional communication functionality.
- Utilize Encompass Partner expertise to add enhanced capabilities with tighter integration to the controller.

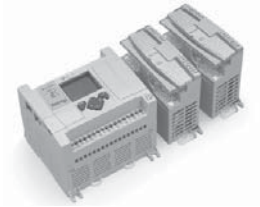
Description	Cat. No.
Four Channel V/I Analog Input Unipolar 0-20mA, 0-10V, 12bits (non-isolated)	**2080-IF4**
Two Channel V/I Analog Input Unipolar 0-20mA, 0-10V, 12bits (non-isolated)	**2080-IF2**
Two Channel V/I Analog Output Unipolar 0-20mA, 0-10V, 12 bits	**2080-OF2**
RS232/485 Isolated Serial Port	**2080-SERIALISOL**
Six Channel - Trim Pot Analog Input	**2080-TRIMPOT6**
Project, Data Log, Recipe Backup and High Accuracy RTC	**2080-MEMBAK-RTC**
Two Channel RTD (non-isolated)	**2080-RTD2**
Two Channel Thermocouple (non-isolated)	**2080-TC2**

Accessories

Description	Cat. No.
USB Adapter Plug★	**2080-USBADAPTER**
1.5" LCD Display and Keypad	**2080-LCD**
120/240V AC to 24V DC Power Supply for Controller and Exp I/O	**2080-PS120-240VAC**

★ For Micro810, 12-pt only

MicroLogix 1100



- Memory Size and Type:
  - 8K flash memory: 4K user program, 4K user data
  - 64K recipe memory out of the 128K data logging
- Embedded LCD display with navigation keys and embedded RTC:
  - 4 x 12 Text display
- 2 Communication ports:
  - 1 RS232/485 port
  - 1 RJ45 EtherNet IP port for peer to peer messaging
- Throughput:
  - 2 ms (for a typical 1 K word user program)
- Online Editing / Programming
- Ten digital inputs, two analog inputs, six digital outputs on each controller
- One embedded 40kHz high-speed counter (on controllers with DC inputs)
- Two 40kHz high-speed PTO/PWM outputs (on controllers with DC outputs)
- Expandable up to 80 I/O's with 1762 I/O modules

Controller Power and I/O Configuration

Line Voltage	Number of Inputs	Number of Outputs	High Speed I/O	Comm. Ports	Cat. No.
120/240V AC	(10) 120V AC (2) Analog Voltage	(6) Individually Isolated Relay	N/A	2	1763-L16AWA
120/240V AC	(6) 24V DC (4) Fast 24V DC (2) Analog Voltage	(6) Individually Isolated Relay	(4) 40 kHz Inputs	2	**1763-L16BWA**
24V DC	(6) 24V DC (4) Fast 24V DC (2) Analog Voltage	(2) Individually Isolated Relay (2) 24V DC FET (2) Fast 24V DC FET	(4) 40 kHz Inputs (2) 40 kHz Outputs	2	**1763-L16BBB**
12…24V DC	(6) 12…24V DC (4) Fast 12/24V DC (2) Analog Voltage	(6) Individually Isolated Relay	(4) 40 kHz Inputs	2	**1763-L16DWD**

Memory Module

- User program and data back-up
- Program compare
- Data file protection
- Memory module write protection
- Removal/insertion under power

Description	Cat. No.
Memory Module	**1763-MM1**
30 cm cable 8-pin mini DIN for ML1100 CH 0 combo port to 6-pin terminal block for direct connection to DH-485 and Modbus RTU networks	**1763-NC01**
Replacement battery for the MicroLogix 1100	**1763-BA**

See Publication 1763-SG001… for complete product information.

MicroLogix 1400

- Memory Size and Type:
  - 10K user program, 10K user data
  - 64K recipe memory out of the 128K data logging
- Embedded LCD display with navigation keys and embedded RTC:
  - 4 x 12 Text display
- Three communication ports:
  - One isolated RS232C/RS485 combination port
  - One non-isolated RS232C port
  - One RJ-45 port for 10/100 Mbps EtherNet/IP peer-to-peer messaging
- Online editing / programming
- Higher I/O count, faster High Speed Counter/PTO and enhanced network capabilities

Controller Power and I/O Configuration

Line Voltage	Number of Inputs	Number of Outputs	High Speed Inputs	Comm. Ports	Cat. No.
120/240V AC	(12) Fast 24V DC (8) Normal 24V DC	(12) Relay	6 @ 100 kHz	3	**1766-L32BWA**
	(20) 120V AC	(12) Relay	N/A	3	1766-L32AWA
24V DC	(12) Fast 24V DC (8) Normal 24V DC	(6) Relay (3) Fast DC (3) Normal DC	6 @ 100 kHz	3	**1766-L32BXB**
120/240V AC	(12) Fast 24V DC (8) Normal 24V DC (4) Analog Voltage Inputs	(12) Relay (2) Analog Voltage Outputs	6 @ 100 kHz	3	**1766-L32BWAA**
	(20) 120V AC (4) Analog Voltage Inputs	(12) Relay (2) Analog Voltage Outputs	N/A	3	1766-L32AWAA
24V DC	(12) Fast 24V DC (8) Normal 24V DC (4) Analog Voltage Inputs	(6) Relay (3) Fast DC (3) Normal DC (2) Analog Voltage Outputs	6 @ 100 kHz	3	**1766-L32BXBA**

Memory Module

- User program and data back-up
- Program compare
- Data file protection
- Memory module write protection
- Removal/insertion under power

Description	Cat. No.
Memory Module	**1766-MM1**

Expansion I/O Modules

Description	Cat. No.
Digital:	
8-Point 120V AC Input Module	**1762-IA8**
8-Point Sink/Source 24V DC Input Module	**1762-IQ8**
16-Point Sink/Source 24V DC Input Module	**1762-IQ16**
8-Point 120/240V AC Triac Output Module	1762-OA8
8-Point Sourcing 24V DC Output Module	**1762-OB8**
16-Point Sourcing 24V DC Output Module	**1762-OB16**
8-Point AC/DC Relay Output Module	**1762-OW8**
16-Point AC/DC Relay Output Module	**1762-OW16**
6-Point Isolated AC/DC Relay Output Module	1762-OX6I
Combination 8-Point Sink/Source 24V DC Input and 6-Point AC/DC Relay Output Module	**1762-IQ8OW6**
Analog:	
4-Channel Voltage/Current Analog Input Module	**1762-IF4**
4-Channel Voltage/Current Analog Output Module	**1762-OF4**
Combination 2-Channel Input 2-Channel Output Voltage/Current Analog Module	**1762-IF2OF2**
Temperature:	
4-Channel RTD/Resistance Input Module	**1762-IR4**
4-Channel Thermocouple/mV Input Module	**1762-IT4**

Programming and Configuration Software for Micro800 and MicroLogix Controllers

Connected Components Workbench Software

Connected Components Workbench™ programming and configuration software supports your Micro800™ controllers and several of the Allen-Bradley® component-class products in your small machine. This software leverages proven Rockwell Automation® and Microsoft® Visual Studio® technologies. Program your controllers, configure your devices and design your HMI screens using this software.

For more information and free download please visit the website:
http://ab.rockwellautomation.com/Programmable-Controllers/Connected-Components-Workbench-Software

RSLogix 500 Programming Software for MicroLogix Controllers

The RSLogix 500 ladder logic programming package helps you maximize performance, save project development time, and improve productivity. This product has been developed to operate on Windows 98 and above operating system. RSLogix 500 can be used for programming both the SLC 500 and MicroLogix controller families.

Description	Cat. No.
RSLogix 500 Starter Edition Progr. Software for MicroLogix controller families. (CD-ROM)	**9324-RL0100ENE**
RSLogix 500 Standard Edition Programming Software for SLC 500 and MicroLogix controller families. (CD-ROM)	**9324-RL0300ENE**
RSLogix 500 Professional Edition. CD-ROM also includes RSLogix Emulate 500, RSNetworx for DeviceNet and RSNetworx for ControlNet.	**9324-RL0700NXENE**
RSLogix Micro Starter	9324-RLM0100ENE
RSLogix Micro Developer	9324-RLM0800ENE

Optional Modular Power Supplies

	Description		Cat. No.
	Power supplies for Micro800 controllers		**2080-PS120-240VAC**
		★	**2080-PS12VDC-24VAC**

★ Contact your local Rockwell Automation sales office or Allen-Bradley distributor for availability

LOGIC

Device Selection

Bulletin	**1492-RCD**	**1492-SP**
Type	**Residual Current Device**	**Miniature Circuit Breaker**
Features	• True IP2X finger-safe design (front) • For applications in which AC and pulsating DC fault currents are likely to appear, nonselective and non-delayed • Designed to prevent unwanted tripping caused by switching electronic circuit devices • Auxiliary and Signal contacts may be added	• True IP2X finger-safe design (front) • Energy Limiting Design protects downstream components better than conventional breakers during short circuits • Field mountable options for selective applications • AC and DC voltage ratings in one convenient device • Superior shock and vibration resistance capabilities • Mounts on hut (DIN) rail
Number of Poles	2 pole (1 + N) 4 pole (3 + N)	1, 2, 3 pole 1 pole + neutral, 3 pole + neutral
Rated voltage	230V AC (1+N), 400V AC (3+N)	230/400V AC, 240/415V AC
Tripping characteristic reference temperature	—	30 °C
Rated tripping current	30, 100, 300, 500 mA	—
Sensitivity	AC and pulsating DC	—
Rated short circuit capability	10 kA with 63 A gG/gL back-up fuse for up to 63 A 10 kA with 80 A gG/gL back-up fuse for 80 A	10 kA
Max. back-up fuse for short circuit protection	63 A gG/gL for up to 63 A 80 A gG/gL for 80 A	100 A gG/gL
Maximum back-up fuse for overload protection	25 A gG/gL (25 A and 40 A devices) 40 A gG/gL (63 A devices) 50 A gG/gL (80 A devices)	—
Degree of protection	IP20	IP20
Mechanical life	≥10000 changeovers	≥6000 changeovers
Mounting	35 mm hut (DIN) rail	35 mm hut (DIN) rail
Operating temperature	-5°C…+40°C	-5°C…+40°C (reduction factors are required for higher temperatures)
Wire size	1.5…35 mm^2	1…25 mm^2
Terminal torque	2.4 N.m ≤40 A, 3.0 N.m ≥63 A	2.4 N.m
Standards and Approvals	IEC/EN 61008 VDE, CE	IEC/EN 60889 CE, VDE, UL 1077, CSA 22.2 No. 235
Product Selection	**See page 2-37**	**See page 2-38**

Device Selection

Bulletin	**1489**		**1492-FB**			
Type	**480Y/277V AC**	**240V AC**	**For Class CC Fuse**	**For Class J Fuse**		**For Midget Fuse**
	0.5…25 A	**0.5…40 A**	**30 A**	**30 A**	**60 A**	**30 A**
Features	• True IP2X finger-safe design (front) • 10,000 A interrupt • A postively trip-free mechanism (breaker operation cannot be defeated by holding the handle in the ON position) • Superior shock and vibration resistance capabilties • Mounts on DIN Rail • IEC 60947-2 - 0.5...40 A @ 240, 415V AC - 15,000 A interrupting • Field-mountable options • Optional terminal for ring lugs		• EN/IEC 60529 Front Finger Protection — Dead front construction • Handle isolates the fuse from line power when it is opened for fuse insertion or removal • Compact size requireing less panel space than open style fuse folders • Optional blown fuse indicators - allow for easy troubleshooting of electrical circuits • Type M holder - accepts 0…30 A midget fuses (1 1/2" x 13/32") • Type C holder - accepts 0…30 A Class CC fuses) • Type J 30 & 60 A holders - accepts Class J fuses • Silver-plated fuse clips • Mounts on DIN rail, marker-ready and increased heat dissipation			
Certifications	UL 489 Listed (CSA C22.2 No. 5.1), UL File Number E197878 VDE (SEC 60 947-2)		CE, ULus, CSA			CE, URus, CSA
Maximum Voltage Rating	480Y/277V AC		600V AC/DC			
Shock	25 G Half Sine Wave for 11 ms (Three Axes)		25 G Half Sine Wave for 11 ms (Three Axes)			
Tripping Characteristic Reference Temperature	40°C (UL/CSA) 30°C (IEC)		NA			
Tripping Characteristic	C Curve: 5…10 D Curve: 10…20		NA			
Vibration	100...500 Hz for 1 hour Amplitude — 10...57 Hz; 0.030 inches peak to peak; 57...500 Hz; 5 G peak		5 G peak or 0.030 "peak-to-peak" displacement for 2 hours in each perpendicular direction. Vibration sweep 10 to 2000 to 10 Hz (15 minutes long)			
Operating Temperature	-13...140°F (-25...+55°C), non-condensing		-4...130°F (–20…+55°C)			
Housing Material	Nylon		Nylon			
Working Voltage	—		110…600V AC/DC or 12…72V AC/DC	110…600V AC/DC		110…600V AC/DC or 12…72V AC/DC
With LED Indicator Leakage Current	—		2.0 mA			
Wire Size	0.8...13 mm²/#18...6 AWG Cu		#16…4 AWG Cu	#14…1 AWG Cu	#10…1 AWG Cu	#16…4 AWG Cu
Interrupt Rating	10 kA @ 240V AC and 480Y/277V AC (UL/CSA)		200 kA			50 kA
Product Selection	**See page 2-43**		**See page 2-45**			

Device Selection

Bulletin	140F
Type	**MCS Fuse Holders**
Features	• Available for UL Class CC or Midget Fuses, with or without blown fuse indication • Lockable in the open position • Compatible with 140M accessories • Compact busbar and connectors of contactors 100C and 100M • 1 NO/ 1 NC Auxiliary Contact, early break NC • Provides capability for dropping out contactor before breaking current on fuse • Late make NO provides positive indication that power circuit is open
Product Selection	**See page 2-46**

Residual Current Devices Bulletin 1492-RCD

Earth Leakage Detectors for IEC Applications.

The Bulletin 1492-RCD line includes Residual Current Devices for earth leakage detection to IEC standards. These devices are used in association with miniature circuit breakers (1492-SP).

1492-RCD2

1492-RCD4

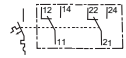
Standard Versions

Operating Voltage, Nominal	Rated Tripping Current	Rated Operational Current	2 poles (1 pole + neutral)	4 poles (3 poles + neutral)
[V]	[mA]	[A]	Cat. No.	Cat. No.
230/400V 50 Hz	30	16	**1492-RCD2A16**	—
		25	**1492-RCD2A25**	**1492-RCD4A25**
		40	**1492-RCD2A40**	**1492-RCD4A40**
		63	—	**1492-RCD4A63**
		80	—	1492-RCD4A80
	100	25	1492-RCD2B25	1492-RCD4B25
		40	1492-RCD2B40	1492-RCD4B40
		63	—	1492-RCD4B63
	300	16	—	1492-RCD4C16
		25	**1492-RCD2C25**	**1492-RCD4C25**
		40	**1492-RCD2C40**	**1492-RCD4C40**
		63	—	**1492-RCD4C63**
		80	—	**1492-RCD4C80**

Versions for Use with Variable Frequency Drives

Operating Voltage, Nominal	Rated Tripping Current	Rated Operational Current	4 poles (3 poles + neutral)
[V]	[mA]	[A]	Cat. No.
230/400V 50 Hz	100	40	1492-RCD4B40D
		63	1492-RCD4B63D
	300	40	**1492-RCD4C40D**
		63	1492-RCD4C63D

Accessories 1492-RCD

	Description	Diagram	Cat. No.
	Dual auxiliary contact module Switches when protective device is operated manually or tripped electrically 2 N.O. – 2 N.C. 2 Form C Contact		**1492-ASPHH3**
	Auxiliary/signal alarm contact module 1 Auxiliary Contact switches when protective device is operated manually or tripped electrically 1 N.O. – 1 N.C. Form C Contact 1 Signal Contact switches when protective device is tripped electrically 1 N.O. – 1 N.C. Form C Contact		**1492-ASPHS3**

Miniature Circuit Breakers Bulletin 1492-SP

1492-SP1

1492-SP2

1492-SP3

1492-SP1…-N

1492-SP3…-N

- Energy Limiting Design - Protects Downstream Components Better than Conventional Breakers During Short Circuits
- Field Mountable Options for Selective Applications
- IP2x Finger-Protection (Front)
- International Approvals - CE Marked, and Meets UL, CSA, and IEC (VDE, GL) Standards for Worldwide Acceptance
- Ratings to 480Y/277V AC @ 240/415V AC - 10 000 A Interrupt Rating
- AC and DC Voltage Ratings - in One Convenient Device
- A Positively Trip-Free Mechanism (Breaker Operation Cannot be Defeated by Holding the Handle in the ON Position)
- 3 Trip Curves: B, C, and D
- Time Delay (D Characteristic) for High Inrush Currents During Inductive Start-Ups Such as Transformers and Power Supplies
- Superior Shock and Vibration Resistance Capabilities — Helps to Prevent Nuisance Tripping
- Mounts on DIN Rail

Miniature Circuit Breakers, Trip Curve C Inductive, 5…10 *In*

Continuous Current Rating	1 Pole ★	1-Pole + Neutral Module ‡	2-Poles ‡	3-Poles ‡	3-Pole + Neutral Module ‡
	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
1	**1492-SP1C010**	**1492-SP1C010-N**	**1492-SP2C010**	**1492-SP3C010**	1492-SP3C010-N
2	**1492-SP1C020**	**1492-SP1C020-N**	**1492-SP2C020**	**1492-SP3C020**	**1492-SP3C020-N**
4	**1492-SP1C040**	**1492-SP1C040-N**	**1492-SP2C040**	**1492-SP3C040**	1492-SP3C040-N
6	**1492-SP1C060**	**1492-SP1C060-N**	**1492-SP2C060**	**1492-SP3C060**	**1492-SP3C060-N**
10	**1492-SP1C100**	**1492-SP1C100-N**	**1492-SP2C100**	**1492-SP3C100**	**1492-SP3C100-N**
13	**1492-SP1C130**	**1492-SP1C130-N**	1492-SP2C130	**1492-SP3C130**	1492-SP3C130-N
16	**1492-SP1C160**	**1492-SP1C160-N**	**1492-SP2C160**	**1492-SP3C160**	**1492-SP3C160-N**
20	**1492-SP1C200**	**1492-SP1C200-N**	**1492-SP2C200**	**1492-SP3C200**	**1492-SP3C200-N**
25	**1492-SP1C250**	**1492-SP1C250-N**	**1492-SP2C250**	**1492-SP3C250**	**1492-SP3C250-N**
32	**1492-SP1C320**	**1492-SP1C320-N**	**1492-SP2C320**	**1492-SP3C320**	**1492-SP3C320-N**
40	**1492-SP1C400**	1492-SP1C400-N	**1492-SP2C400**	**1492-SP3C400**	**1492-SP3C400-N**
50	**1492-SP1C500**	1492-SP1C500-N	1492-SP2C500	**1492-SP3C500**	**1492-SP3C500-N**
63	1492-SP1C630	1492-SP1C630-N	1492-SP2C630	**1492-SP3C630**	**1492-SP3C630-N**

★ Package Quantity = 1
‡ Package Quantity = 2
For Trip Curves B visit our website or consult your local sales office.

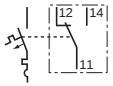
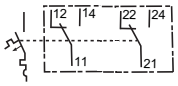
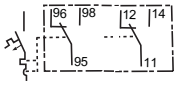
Miniature Circuit Breakers, Trip Curve D Highly Inductive, 10…20 *In*

Continuous Current Rating	1 Pole ★	1-Pole + Neutral Module ‡	2-Poles ‡	3-Poles ‡	3-Pole + Neutral Module ‡
	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
1	**1492-SP1D010**	**1492-SP1D010-N**	**1492-SP2D010**	**1492-SP3D010**	1492-SP3D010-N
2	**1492-SP1D020**	**1492-SP1D020-N**	**1492-SP2D020**	**1492-SP3D020**	1492-SP3D020-N
4	**1492-SP1D040**	**1492-SP1D040-N**	**1492-SP2D040**	**1492-SP3D040**	1492-SP3D040-N
6	**1492-SP1D060**	**1492-SP1D060-N**	**1492-SP2D060**	**1492-SP3D060**	1492-SP3D060-N
10	**1492-SP1D100**	**1492-SP1D100-N**	**1492-SP2D100**	**1492-SP3D100**	**1492-SP3D100-N**
13	1492-SP1D130	1492-SP1D130-N	1492-SP2D130	1492-SP3D130	1492-SP3D130-N
16	**1492-SP1D160**	**1492-SP1D160-N**	**1492-SP2D160**	**1492-SP3D160**	1492-SP3D160-N
20	**1492-SP1D200**	**1492-SP1D200-N**	**1492-SP2D200**	**1492-SP3D200**	1492-SP3D200-N
25	**1492-SP1D250**	1492-SP1D250-N	**1492-SP2D250**	**1492-SP3D250**	1492-SP3D250-N
32	**1492-SP1D320**	1492-SP1D320-N	1492-SP2D320	**1492-SP3D320**	1492-SP3D320-N
40	1492-SP1D400	1492-SP1D400-N	**1492-SP2D400**	**1492-SP3D400**	**1492-SP3D400-N**
50	**1492-SP1D500**	1492-SP1D500-N	**1492-SP2D500**	**1492-SP3D500**	1492-SP3D500-N
63	**1492-SP1D630**	1492-SP1D630-N	**1492-SP2D630**	**1492-SP3D630**	1492-SP3D630-N

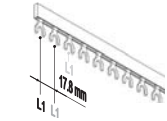
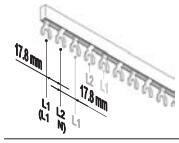
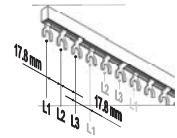
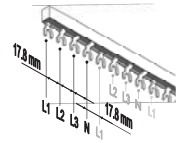
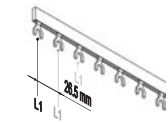
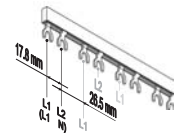
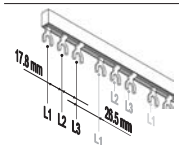
★ Package Quantity = 1
‡ Package Quantity = 2
For Trip Curves B visit our website or consult your local sales office.

Miniature Circuit Breakers

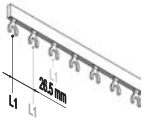
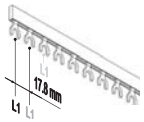
Accessories

	Description	Diagram		PQ	Cat. No.
	Auxiliary contact module Switches when protective device is operated manually or tripped electrically 1 N.O. – 1 N.C. Form C Contact			1	**1492-ASPH3**
	Dual auxiliary contact module Switches when protective device is operated manually or tripped electrically 2 N.O. – 2 N.C. 2 Form C Contact			1	**1492-ASPHH3**
	Auxiliary/signal alarm contact module 1 Auxiliary Contact switches when protective device is operated manually or tripped electrically 1 N.O. – 1 N.C. Form C Contact 1 Signal Contact switches when protective device is tripped electrically 1 N.O. – 1 N.C. Form C Contact			1	**1492-ASPHS3**
	Undervoltage release module Use the undervoltage release module to trip the adjacent breaker poles when the applied voltage is less than the nominal voltage. Undervoltage trip is often used when loss of power and eventual restoration of power creates an unsafe or unknown set of condition.		50…115V AC	1	1492-ASPU115
			110…240V AC	1	1492-ASPU230
	Shunt trip module Use the shunt trip module to trip the adjacent breaker poles from a remote location. The module is actuated by applying a voltage (pickup voltage) to the trip terminals. Shunt trip modules are often used in emergency shutdown circuits where multiple power circuits must be switched off from a single location.		110…415V AC (110…230V DC)	1	**1492-ASPA1**
			12…110V AC (12…60V DC)	1	1492-ASPA2
	Mounting Rails **DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m			10	**199-DR1**
	DIN hi-rise symmetrical rail 1 m, 35 mm x 7.5 mm, 57.4 mm (2.26 in.) high Copper-free aluminum			2	1492-DR6
	DIN angled hi-rise symmetrical rail 1 m, 35 mm x 7.5 mm, 71.0 mm (2.80 in.) high Zinc-plated, chromated steel			2	1492-DR7
	End Anchor			10	1492-EAH35
	Lockout Attachment			10	1492-ASPLOA

PQ = Package Quantity

	Description	No. of 1492-SP	Rated Operational Current (I_e) [A]	PQ	Cat. No.
Incoming Terminals for fork style commoning links, IP20 protection (Not for use in North American installations)					
	For max 25 mm² wire			1	**1492-ASPCLT25**
	For max 35 mm² wire			1	1492-ASPCLT35
Fork Style Commoning Links for 1492-SP without Auxiliary Contact Module (may not be cut)					
	1 pole	2	63	20	**1492-ASPCL102**
	1 pole	6	63	20	1492-ASPCL106
	1 pole	12	63	20	1492-ASPCL112
	2 poles (1p + N)	2	63	10	**1492-ASPCL204**
	2 poles (1p + N)	3	63	10	**1492-ASPCL206**
	2 poles (1p + N)	6	63	10	**1492-ASPCL212**
	3 poles	2	63	10	**1492-ASPCL306**
	3 poles	4	63	10	**1492-ASPCL312**
	4 poles	2	63	1	1492-ASPCL408
	4 poles	3	63	1	1492-ASPCL412
Fork Style Commoning Links for 1492-SP with an Auxiliary Contact Module or Auxiliary/Signal Alarm Contact Module					
	1 pole	2	63	20	**1492-ASPCL1A02**
	1 pole	6	63	20	**1492-ASPCL1A06**
	1 pole	9	63	20	**1492-ASPCL1A09**
	2 poles (1p + N)	2	63	10	1492-ASPCL2A04
	2 poles (1p + N)	3	63	10	1492-ASPCL2A06
	2 poles (1p + N)	5	63	10	1492-ASPCL2A10
	3 poles	2	63	10	**1492-ASPCL3A06**
	3 poles	4	63	10	**1492-ASPCL3A12**

PQ = Package Quantity

	Description	No. of 1492-SP	Rated Operational Current (I_e) [A]	PQ	Cat. No.
Fork Style Commoning Links for multiple single pole 1492-SP, each with 1 Auxiliary Contact or 1 Auxiliary/Signal Alarm Contact Module					
		2x3 (1p)	63	10	1492-ASPCL3AP06
		2x3 (1p)+2 (1p)	63	10	1492-ASPCL3AP08
		3x3 (1p)	63	10	1492-ASPCL3AP09
	Protective cover for unused fork termination			5	**1492-ASPCLPS**
Fork Style Commoning Links (may be cut to length, not for use with accessories)					
	1 pole	1 m (56 devices/m)	63	1	**1492-ASPCL1**
	3 poles	1 m (19 devices/m)	63	1	**1492-ASPCL3**
	End Cap (for 3 poles)			10	**1492-ASPEC1**

PQ = Package Quantity

Miniature Circuit Breakers Bulletin 1489

- IP2x Finger-Protection (Front)
- North America certifications: UL 489, CSA 22.2 No. 5.1
- International standards: CE Marked, and IEC (VDE) standards for worldwide acceptance
- Ratings: UL/CSA — max. 480Y/277V AC – 10,000 A interrupt rating; IEC — max. 240/415V AC – 15,000 A interrupt rating
- Trip curves: C and D
- Time delay (D Characteristic) for high inrush currents during inductive start-ups Such as motors, transformers and power supplies
- Mounts on Standard 35 mm DIN Rail (A-B p/n 199-DR1)

Miniature Circuit Breakers, Trip Curve "C"

No. of Poles	Rated Current [A]	UL/CSA Max. Volt.	Cat. No.
1-Pole	2	480Y/277V AC, 48V DC	**1489-A1C020**
	4		**1489-A1C040**
	6		**1489-A1C060**
	10		**1489-A1C100**
	16 ★		**1489-A1C160**
2-Pole	2	480Y/277V AC, 96V DC	**1489-A2C020**
	4	480Y/277V AC, 96V DC	**1489-A2C040**
	6	480Y/277V AC, 96V DC	**1489-A2C060**
	10	480Y/277V AC, 96V DC	**1489-A2C100**
	16 ★	480Y/277V AC, 96V DC	**1489-A2C160**
3-Pole	2	480Y/277V AC	1489-A3C020
	4	480Y/277V AC	**1489-A3C040**
	6	480Y/277V AC	**1489-A3C060**
	10	480Y/277V AC	**1489-A3C100**
	16 ★	480Y/277V AC	**1489-A3C160**

★ Common IEC current rating.

Miniature Circuit Breaker Accessories

Description	CSA/UL Certifi-cations	IEC 60947-2 Compliance	CE	EN/IEC Max. Volt.	UL/CSA Max. Volt.	Connection		Cat. No.
Lockout Attachment	Yes	Yes	—	—	—	—		1489-AALOA
Auxiliary Contact, 2 sets, each are Form C, 1 N.O. & 1 N.C.	Yes	Yes	—	3 A, 250V AC (AC13) 0.5 A, 110V DC	2 A, 240V AC 0.5 A, 110V DC	Cable	★	**1489-AAHH3**
Auxiliary/Signal Contact, each are Form C, 1 N.O. & 1 N.C	Yes	Yes	—	3 A, 250V AC (AC13) 0.5 A, 110V DC	2 A, 240V AC 0.5 A, 110V DC	Cable	★	**1489-AAHS3**
Auxiliary Contact, Feed Through, 1 N.O. & 1 N.C.	Yes	Yes	—	3 A, 250V AC (AC13) 0.5 A, 110V DC	2 A, 230V AC 0.5 A, 110V DC	Cable	⑦	1489-ABH12
Shunt Trip Module	Yes	Yes	—	110...415V AC 110…230V DC	110...415V AC 110…230V DC	Cable		1489-AASTA1
Shunt Trip Module	Yes	Yes	—	12...110V AC 12…60V DC	12...110V AC 12…60V DC	Cable		1489-AASTA2

★ Use of auxiliary or signal contact limits the circuit breaker to a maximum voltage of 240V AC for UL/CSA applications.
‡ Use of this auxiliary contact allows application of the circuit breaker to full rating of 480Y/ 277V AC for UL/CSA applications.

Bulletin 1489 Bus Bar

Description	No. of Poles	No. of Phases	Number of Circuit Breakers	PQ	Cat. No.
Bus Bar ‡	6	1	6	10	1489-AACL106
	12		12		1489-AACL112
	18		18		1489-AACL118
	6	2	3		1489-AACL206
	12		6		1489-AACL212
	18		9		1489-AACL218
	6	3	2		1489-AACL306
	12		4		1489-AACL312
	18		6		1489-AACL318

‡ UL 489 recognized (E300325), CE

Bulletin 1489 Bus Bar Accessories

Description	No. of Poles	Wire Range	PQ	Cat. No.
Terminal Lug	1-pole for circuit breaker termination	#14 … #2 AWG 2.5 … 35 mm^2	10	1489-AACLT35
Protective Cover for Unused Termination	3-pole set (may be separated)	—	10	1489-AACLPS

PQ = Package Quantity

See Publication 1489-SG001… for complete product information.

DIN Rail Mounting Fuse Holders 1492-FB

- EN/IEC 60529 Finger Protection — Dead Front Construction
- The Patented Handle Design Isolates the Fuse from Power When Handle is Opened for Fuse Insertion or Removal
- Optional Blown Fuse LED Indicator — Allow for Easy Troubleshooting of Electrical Circuits
- Easy Insertion/Removal of Fuses, No Special Tools Required
- Mounts on Standard 35 mm DIN Rail (A-B p/n 199-DR1)

DIN Rail Mounting Fuse Holders for Class CC / Midget Fuse

Description		PQ	For Class CC Fuse 30 A ★ Cat. No.	For Midget Fuse 30 A Cat. No.
1-Pole	Fuse Block	6	**1492-FB1C30**	**1492-FB1M30**
	1-Pole Fuse Block with Indication, 110...600V	6	**1492-FB1C30-L**	1492-FB1M30-L
	1-Pole Fuse Block with Indication, 12…72V	6	1492-FB1C30-D1	1492-FB1M30-D1
2-Poles	2-Pole Fuse Block	3	**1492-FB2C30**	**1492-FB2M30**
	2-Pole Fuse Block with Indication	3	**1492-FB2C30-L**	1492-FB2M30-L
3-Poles	3-Pole Fuse Block	2	**1492-FB3C30**	1492-FB3M30
	3-Pole Fuse Block with Indication	2	**1492-FB3C30-L**	1492-FB3M30-L

★ All major fuse brands and current ranges have been evaluated for this fuse holder. Due to the heat they generate, the following fuses must be derated:
Ferraz Shamut ATQR 1.25 I = 0.42 A max.
Ferraz Shamut ATQR 1.40 I = 0.47 A max.
PQ = Package Quantity

DIN Rail Mounting Fuse Holders for Class J Fuse

Description		PQ	For Class J Fuse 30 A Cat. No.	For Class J Fuse 60 A Cat. No.
1-Pole	1-Pole Fuse Block	6	1492-FB1J30	1492-FB1J60
	1-Pole Fuse Block with Indication, 110...600V	6	1492-FB1J30-L	1492-FB1J60-L
2-Poles	2-Pole Fuse Block	3	1492-FB2J30	1492-FB2J60
	2-Pole Fuse Block with Indication	3	1492-FB2J30-L	1492-FB2J60-L
3-Poles	3-Pole Fuse Block	2	**1492-FB3J30**	**1492-FB3J60**
	3-Pole Fuse Block with Indication	2	**1492-FB3J30-L**	**1492-FB3J60-L**

PQ = Package Quantity

MCS Fuse Holders 140F

- Available for UL Class CC or Midget Fuses and IEC 10 x 38 mm fuses, with or without blown fuse indication
- Lockable in the open position
- Compatible with 140M accessories
- Compact busbar and connectors of contactors 100C and 100M
- 1 NO/ 1 NC Auxiliary Contact, early break NC
- Provides capability for dropping out contactor before breaking current on fuse
- Late make NO provides positive indication that power circuit is open

Description	Approvals				Cat. No.
	IEC	CE Mark	UL	CSA	
Fuse Holder, UL Class CC — 30 A max.	Yes	Yes	Yes	Yes	**140F-D3C-C30**
Fuse Holder with Blown Fuse Indication, UL Class CC — 30 A max.	Yes	Yes	Yes	Yes	**140F-D3C-C30L**
Fuse Holder, UL Midget — 30 A max.	Yes	Yes	Yes	Yes	140F-D3M-C30
Fuse Holder with Blown Fuse Indication, UL Midget — 30 A max.	Yes	Yes	Yes	Yes	140F-D3M-C30L
Fuse Holder, UL Midget — 30 A max.	Yes	Yes	No	No	140F-D3F-C30
Fuse Holder with Blown Fuse Indication, UL Midget — 30 A max.	Yes	Yes	No	No	140F-D3F-C30L
Auxiliary Contact for Fuse Holder (1 N.O. Late Make + 1 N.C. Early Break)	Yes	Yes	Yes	Yes	140F-C-AFA11

For additional accessories refer to contactors 100M/100-C and circuit breakers 140M.

Device Selection

Bulletin	**4983-DH**	**4983-DS**	**4983-DD**	**4983-DC**
Type	**DIN Rail Heavy-Duty AC Surge Protective Device**	**DIN Rail Standard Duty AC Surge Protective Device**	**DIN Rail Dataline Surge Protective Device**	**DIN Rail Combination Filter and Surge Protective Device**
Features	• High energy absorption capability • Visual fault indicator linked to internal thermal disconnect • Automatic trigger for SPD replacement • Remote signaling	• Compact modular design • Visual fault indicator linked to internal thermal disconnect • Automatic trigger for SPD replacement • Remote signaling	• Compact modular design • Protects industrial communication networks	• Small combination (filter and SPD) package size • Features Islatrol® technology • LED power indication
AC Network	110…120V AC (1 wire) 220…230V AC (1 wire) 380…400V AC (1 wire) 120V AC 1-phase 120/208V AC 3-phase + N 480Y/277V AC 3-phase + N 230V AC 1-phase 230/240V AC 3-phase + N	110…120V AC (1 wire) 220…230V AC (1 wire) 380…400V AC (1 wire) 120V AC 1-phase 120/208V AC 3-phase + N 480Y/277V AC 3-phase + N 230V AC 1-phase 230/240V AC 3-phase + N	4…20 mA loop, RS232 type, High speed transmission (LAN), RS485 type, RS422 type	—
Operating Voltage	—			120 or 240V AC
Max. Continuous Operating Voltage	150V AC 330V AC	150…400V AC	8…28V DC	150 Vrms (125%) @ 120V AC 320 Vrms (115%) @ 240V AC
Ampacity	—			3…20 A
Line Frequency	—			47…63 Hz
Protection Level	1 or 1.5 kV	0.7…2 kV	25…40V	—
UL1449 Suppressed Voltage Rating (SVR)	0.4 or 0.6 kV	1.5, 1.9, or 1.5 kV	—	—
Standards Compliance/ Certifications	UL 1449, CSA C22.2 No. 8, IEC 61643-1, CE, EN 61643-11	UL 1449, CSA C22.2 No. 8, IEC 61643-1, CE, EN 61643-1	UL 497B, IEC 61643-1, CE, EN61643-11	UL 1283, UL 1449, CE
Operating Temperature (non-condensing)	-40...+85 °C			-40...+60 °C derate linearly to 60% @ +70 °C
Product Selection	**Page 2-48**	**Page 2-49**	**Page 2-50**	**Page 2-50**

DIN Rail Heavy-Duty AC Surge Protective Devices, 4983-DH

Bulletin 4983-DH is a heavy-duty surge protector. This SPD combines a high-energy varistor (MOV) network with a gas discharge tube to increase performance in protection level, life duration, and suppression of leakage current. The Bulletin 4983-DH product is connected in parallel and can be located in the feeder circuit.

- Highest energy absorption capability of all Bulletin 4983 products
- Robust design avoids unnecessary replacement
- Visual fault indicator linked to internal thermal disconnect
- Automatic trigger for SPD replacement
- Safety remote signaling standard

AC Network	No. of Poles and Devices Needed	Con-nection Mode	MCOV (U_c) [V AC]	Lightning Current 10/350 µs (I_{imp}) [kA]	Max. Discharge Current 8/20µs (I_{max}) [kA]	Protection Level (U_p)	UL 1449 SVR [kV]	Cat. No.
230/400V (1-wire)	1	L/G or N/G	330	25	70	1.5 ★	0.6	4983-DH300-25
230/400V (1-phase: TNS)	2							
230/400V (3-phase: TNC	3							
220…230V (3-phase + N: TNS)	4							
230/400V (1-wire)	1	L/G or N/G	330	50	70	1.5 ‡	0.6	4983-DH300-50
230/400V (1-phase: TNS)	2							
230/400V (3-phase: TNC)	3							
230/400V (3-phase + N: TNS)	4							

★ 250 A max. fuses required to protect the surge protector in case of short-circuit failure. They must be installed in series with each pole of the surge protector.

‡ 500 A max. fuses required to protect the surge protector in case of short-circuit failure. They must be installed in series with each pole of the surge protector.

Note: N = Neutral
L/N = Line/neutral
N/G = Neutral/ground
MCOV = Max. Continuous Operating Voltage
SVR = Suppressed Voltage Rating

DIN Rail AC Surge Protective Devices, 4983-DS

Bulletin 4983-DS offers a number of options to meet your basic surge protection needs. The Bulletin 4983-DS products are connected in parallel and use an MOV to clamp high-voltage surges. The Bulletin 4983-DS devices are primarily used in the main electrical panel for the protection of 1- and 3-phase systems.

- Compact modular design
- Robust design avoids unnecessary replacement
- Visual fault indicator linked to internal thermal disconnect
- Automatic trigger for SPD replacement
- Remote signaling standard

Voltage Range	Connection Mode	MCOV (U_c) [V AC]	Nominal Discharge Current 8/20µs (I_n) [kA]	Max. Discharge Current 8/20µs (I_{max}) [kA]	Protection Level (U_p) [kV]	UL 1449 SVR [kV]	Wiring Configuration	Cat. No.‡
230/400V AC	L-G or N-G	275	20	40	1.25	0.9	1	4983-DS230-401
							1 + N ♣	
							3 ♠	
	L-N and N-G				1.5		1 + N	4983-DS230-401G
							3 + N	4983-DS230-403G
230/400V AC 480Y/277V AC	L-G or N-G	400	20	40	2		1 + N ♣	4983-DS277-401
							3 ♠	
	L-G and N-G						3 + N	4983-DS277-404

‡ The "G" suffix in the catalog number indicates inclusion of additional gas discharge tube.
♣ Order two devices for this application.
♠ Order three devices for this application.

Note: N = Neutral
L/N = Line/neutral
N/G = Neutral/ground
MCOV = Max. Continuous Operating Voltage
SVR = Suppressed Voltage Rating

DIN Rail Dataline Surge Protective Devices, 4983-DD

Bulletin 4983-DD SPDs are designed to protect industrial communication networks. This device uses a combination of 3-electrode gas discharge tubes and fast-clamping diodes. Typical applications include industrial processing equipment, transmission systems, I/O cards, probes, actuators, and displays.

- Compact, modular design
- Cost-effective to protect individual loads

AC Network	MCOV [V DC]	Nominal Discharge Current 8/20µs (I_n) [kA]	Max. Discharge Current 8/20µs (I_{max}) [kA]	Protection Level (U_p)	Nom. Line Voltage [V]	Line Type	Cat. No.
4…20 mA Loop type	28	5	20	40 V	24V	1 pair with shield	4983-DD24
RS232 type	15			30 V	12V		4983-DD12
High-speed transmission (LAN) RS485 type, RS422 type	8			25 V	6V		4983-DD06

Note: MCOV = Max. Continuous Operating Voltage

Filter and Surge Protective Device 4983-DC

Bulletin 4983-DC is the combination of a filter and a surge protective device. The Bulletin 4983-DC product meets both UL 1449 and UL 1283. This product allows surge and noise protection in one small package.

- Small combination (filter and SPD) package size
- Features Isatrol® technology
- All-mode transient protection with exceptional Line to Neutral value of 25 kA
- LED power indication
- Form C contact for remote status indication
- DIN Rail mountable

Operating Voltage	MCOV	Line Frequency [Hz]	UL 1449 SVR	Ampacity [A]	Cat. No.
240V AC	320 Vrms (115%) @ 240V AC	47…63	Normal Mode — 600V Common Mode — 1000V	3.0	4983-DC240-03
240V AC				5.0	4983-DC240-05
240V AC				10	4983-DC240-10
240V AC				20	4983-DC240-20

Note: MCOV = Max. Continuous Operating Voltage
SVR = Suppressed Voltage Rating

Switched Mode Power Supplies

Bulletin	1606-XLP	1606-XLS	1606-XLE
Type	**Switched Mode Power Supply Single/Dual-Phase**	**Switched Mode Power Supply Single/Three-Phase**	**Switched Mode Power Supply Single/Three-Phase**
Output Power	15…100 W	80...960 W	80...960 W
Efficiency	80…90%	91.6…95%	90…92%
Output Voltage/ Secondary Voltage	5, 10...12, 12, 15, 24, 48V DC	12…15, 24, 30, 36…42, 48V DC	24, 48V DC
Rated Output Current (24V DC)	1.3…4.2 A	3.4…40 A	5…10 A
Operating Temperature Range	-10…+70°C >60°C with derating	-25…+70°C >60°C with derating	-25…+70°C >60°C with derating
Non-Operating Temperature Range	-40…+85°C		
Certifications	cULs, CE	cULs, CE	cULs, CE
Standards	EN 50081-1, EN 61000-6-2, EN 61000-3-2 (A14) UL 508 UL 60950, CAN/CSA C22.2 No. 60950	EN 55011 (Class B), EN 55022 (Class B), EN 61000-6-2, EN 61000-3-2 (A14), EN 50081-1 UL 508 UL 1950	EN 55011 (Class B), EN 55022 (Class B), EN 61000-6-2, EN 61000-3-2 (A14), EN 50081-1 UL 508 UL 1950
Special Application Products	- Compact redundancy module for 10…60V DC - Buffer module for extended ride-through - Redundancy modules		- Redundant power supplies - DC UPS - DC converter
Product Selection	**See page 2-53**	**See page 2-53**	**See page 2-53**

Uninterruptible Power Supplies

Bulletin	1609-U	1609-P	1609-S
Type	**Uninterruptible Power Supply**	**Uninterruptible Power Supply**	**Uninterruptible Power Supply**
Output Power	500 VA/325 W	3…10 kVA	350 VA/280 W
Input Voltage/ Primary Voltage	120, 208/230V AC		
Efficiency	96%	86%	96%
Output Voltage/ Secondary Voltage	120, 208/230V AC		
Rated Output Current	4.12 A	11…48 A	2.9 A
Operating Temperature Range	0…50°C	0…40°C	0…40°C
Non-Operating Temperature Range	-20…+60°C		
Insulation	—		
Certifications	UL, CSA, CE		
Standards	EN 50091-1-1, EN 50091-2 (Class 2) UL 1778 CSA C22.2 No. 107.3		
Product Selection	**See page 2-56**	**See page 2-56**	**See page 2-56**

Power Supplies 1606

- Low inrush current
- PFC choke
- Wide range input; auto select input
- Superior overload design (continuous current, no hiccup)
- NEC Class 2 'Limited Power' option
- Selectable operating mode (single/parallel)
- Superior efficiency and temperature rating

Single Phase Power Supplies

Output Power [W]	Output Voltage [V DC]	Output Current [A]	Input Voltage	Special Features	Parallel Operation (inclined Charact.)	Meets EN 61000-3-2 (PFC Harmonics)	Cat. No.
1606-XLP Compact Single Phase							
15	5…5.5	3	100…240V AC, 85…375V DC	NEC Class 2	Yes	—	1606-XLP15A
	12…15	1.3			Yes	—	1606-XLP15B
	24…28	0.6			Yes	—	1606-XLP15E
25	5…5.5	5			Yes	NA	**1606-XLP25A**
30	10…12	3			Yes	NA	**1606-XLP30B**
	24…28	1.3			Yes	NA	**1606-XLP30E**
36	+/- 12/15V	2.8		Adjustable output voltage NEC Class 2	No	—	**1606-XLP36C**
50	12…15	4.2			Yes	NA	**1606-XLP50B**
	24…28	2.1		NEC Class 2	Yes	NA	**1606-XLP50E**
	24…28	2.1			Yes	NA	1606-XLP50EZ
	48…56	1			Yes	NA	1606-XLP50F
72	24…28	3	100…120/220…240V AC, 220…375V DC	NEC Class 2	Yes	NA	**1606-XLP72E**
90	12…15	7.5			Yes	Yes	**1606-XLP90B**
95	24…28	3.9	100…200/200…240V AC, 220…375V DC	NEC Class 2	No	Yes	**1606-XLP95E**
100	24…28	4.2		—	Yes ★	Yes	**1606-XLP100E**
	48…56	2.1		—	Yes ★	Yes	1606-XLP100F
1606-XLE Essential Single Phase							
80	24…28	3.3	100…120/200…240V AC	—	No	Yes	**1606-XLE80E**
120	24…28	5		Auto-select input	No	—	**1606-XLE120E**
					No	—	1606-XLE120EC
			180…264V AC	200…240V AC only	No	—	**1606-XLE120EE**
240	24…28	10	100…120/200…240V AC	Auto-select input	No	—	**1606-XLE240E**
			180…264V AC	200…240V AC only	No	—	**1606-XLE240EE**
			100…120/200…240V AC	—	No	—	**1606-XLE240EP**
	48…52	5		Auto-select input	No	—	1606-XLE240F

★ Single/parallel operation (inclined characteristic) selectable (jumper)

Single Phase Power Supplies, continued

Output Power [W]	Output Voltage	Output Current [A]	Input Voltage	Special Features	Parallel Operation (inclined Charact.)	Cat. No.
1606-XLS Performance Single Phase						
80	24…28	3.3	100…240V AC, 110…150V DC	—	Yes	**1606-XLS80E**
120	24…28	5		—	Yes	**1606-XLS120E**
180	12…15	15		—	Yes	1606-XLS180B
240	24…28	10		—	Yes	**1606-XLS240E**
	24…28	10		Conformal Coating	Yes	1606-XLS240EC
	48…56	5		—	Yes	1606-XLS240F
	28…32	8		—	Yes	1606-XLS240K
480	24…28	20		—	Yes	**1606-XLS480E**
	24…28	20		Conformal Coating	Yes	1606-XLS480EC
	24…28	20	200…240V AC	—	Yes	**1606-XLS480EE**
	48…56	10	100…240V AC, 110…150V DC	—	Yes	1606-XLS480F
	36…42	13.3		—	Yes	1606-XLS480G
960	24…28	40	200…240V AC	—	Yes	1606-XLS960EE

Two Phase Power Supplies

Output Power [W]	Output Voltage	Output Current [A]	Input Voltage	Special Features	Parallel Operation (inclined Charact.)	Cat. No.
1606-XLP Compact Two Phase						
90	24…28	3.75	380…480V AC	NEC Class 2	No	**1606-XLP90E-2**
100	24…28	4.2	380…480V AC	—	Yes	1606-XLP100E-2
1606-XLE Essential Two Phase						
96	12...15	8	380…480V AC, 600V DC	—	Yes	1606-XLE96B-2
120	24…28	5		—	Yes	1606-XLE120E-2

Three Phase Power Supplies

Output Power [W]	Output Voltage	Output Current [A]	Input Voltage	Special Features	Parallel Operation (inclined Charact.)	Cat. No.
1606-XLE Essential Three Phase						
240	24…28	10	380…480V AC, 600V DC	—	Yes	**1606-XLE240E-3**
1606-XLS Performance Three Phase						
480	24…28	20	380…480V AC, 600V DC	—	Yes	**1606-XLS480E-3**
	24…28	20		Conformal Coating	Yes	1606-XLS480E-3C
	48…56	10		—	Yes	1606-XLS480F-3
	36…42	13.3		—	Yes	1606-XLS480G-3
960	24…28	40	380…480V AC, 600V DC	—	Yes	1606-XLS960E-3
	48...54	20		—	Yes	1606-XLS960F-3

Power Supplies 1606, continued

Output Power [W]	Output Voltage	Output Current [A]	Input Voltage	Special Features	Parallel Operation (inclined Charact.)	Meets EN 61000-3-2 (PFC Harmonics)	Cat. No.
1606-XL Special Modules							
—	23…27.8	20	24…28.8V DC	Brownout buffer module	—	NA	1606-XLBUFFER
480	22.5…27.8	20			Yes	NA	1606-XLSBUFFER24
960	45…54	10	48…56V DC		Yes	NA	1606-XLSBUFFER48
40	5.1	8	18…36V DC	DC/DC converter	Yes	NA	1606-XLDC40A
92	24	3.8	14…32.4V DC	DC/DC converter, NEC Class 2	No	NA	1606-XLDC92D
91	24	3.8	100…240V AC, 110…300V DC	DeviceNet approved, electronically limited 3.8 A	Yes	Yes	**1606-XLSDNET4**
192	24	8		DeviceNet approved, electronically limited 8 A	Yes	No	**1606-XLSDNET8**
60	24	2.5	100…120/200…240V AC, 160…375V DC	N+1 Redundant capable , NEC Class 2 §	Yes ★	NA	1606-XL60DR
120		5	100…120/200…240V AC, 210…375V DC		Yes ★	Yes	1606-XL120DR
240		10	100…120/200…240V AC, 240…375V DC	N+1 Redundant capable §	Yes ★	No	**1606-XL240DR**
384	V_{in} 1 - .9V typ	16	10…60V DC	Compact redundancy 10…60 V DC ‡	—	NA	1606-XLPRED
480		20		Compact redundancy 10-60 V DC	—	—	1606-XLSRED
		20	24…60V DC	Alarm contacts	—	—	**1606-XLERED**

★ Single/parallel operation (inclined characteristic) selectable (jumper)
‡ To be used alongside 20 and 30 A power supplies (or smaller)
§ Used with a pair of identical power supplies to offer N+1 redundancy

DC - UPS's

Output Power [W]	Output Voltage	Output Current [A]	Description	Cat. No.
240	22.5…30V DC	10	DC UPS / external battery ★	**1606-XLS240-UPS**
			DC UPS / internal battery	1606-XLS240-UPSC

★ Charger module only to be used alongside a battery assembly, which must be ordered separately.

Accessories

Description	Cat. No.
Back-of-panel bracket for XL	1606-XLA
Back-of-panel bracket for XLS and XLE power supplies, **below 20 A**	1606-XLB
7 Ah/12V Battery Assembly with Bracket, for use with DC UPS	**1606-XLSBATASSY1**
26 Ah/12V Battery Assembly with Bracket, for use with DC UPS	1606-XLSBATASSY2
7 Ah/12V Battery	1606-XLSBAT1
26 Ah/12V Battery	1606-XLSBAT2

Uninterruptible Power Supplies

Bulletin 1609-U Series

- Rugged industrial design
- DIN Rail mountable or back-of-panel mountable
- Remote monitoring/configuration
- Line interactive
- Dry Contact I/O
- Elevated temperature performance (up to 50°C)
- Comprehensive network management
- Pure sine wave output

Output Power	Input Voltage	Operating Temperature	Without Network Management Card Cat. No.	With Network Management Card Cat. No.
500VA (325 W)	120V AC	0…40 °C	1609-U500NS	1609-U500NSC
		0…50 °C	1609-U500NH	1609-U500NHC
	208/230V AC	0…40 °C	**1609-U500ES**	1609-U500ESC
		0…50 °C	**1609-U500EH**	1609-U500EHC

Bulletin 1609-P Series

- Rugged industrial design
- Tower/Rack compatible
- Extended runtime
- Battery management system
- Hot swappable batteries
- Comprehensive network management
- Remote monitoring/configuration
- Double conversion online
- Pure sine wave output
- Frequency and voltage regulation
- Automatic internal bypass

Output Power	Input Voltage	Cat. No.
3000VA (2100 W)	208V AC	1609-P3000H
3000VA (2100 W)	120V AC	1609-P3000N
3000VA (2100 W)	230V AC	1609-P3000A
5000VA (3500 W)	208/230V AC	1609-P5000E
8000VA (6400 W)	208/230V AC	1609-P8000E
10000VA (8000 W)	208/230V AC	1609-P10000E

Bulletin 1609-S Series

- DIN Rail mountable or back-of-panel mountable
- Line interactive
- Pure sine wave output
- Intelligent battery management system
- Serial communication

Output Power	Input Voltage	Cat. No.
350VA (280 W)	120V AC	1609-S350NS
350VA (280 W)	208/230V AC	1609-S350ES

1609 Accessories

Description	Output Power	For Use With Series	Cat. No.
40 °C replacement battery	500VA (325 W)	U, S	**1609-500SBAT**
50 °C replacement battery	500VA (325 W)	U	**1609-500HBAT**
Network management card		U, P	**1609-NMC**
Remote start cable		U, P, S	1609-RSC
Replacement battery		P	1609-PBAT
External battery pack		P	1609-PXBP
5000VA CCT (120V step down transformer)		P	1609-5000CCT
Rail kit		P	1609-PRK1
DIN Rail kit		S	1609-SDK1
Dry contact I/O communication cable		S	1609-SDC1
Hardwire kit (for 3 and 5 kVA units)		P	1609-HDK1
Service bypass switch (16 kVA)		P	1609-PSB1

Operator Interface

TABLE OF CONTENTS

Control and Indicating Units 3-2

Graphic Terminals 3-45

Bulletin	**800B**	**800F**	**800FD**	**800FC**
Description	**Push Buttons**	Push Buttons	Monolithic Push Buttons	Pendant Stations
Mounting Hole Size	**16 mm**	**22.5 mm**	**22.5 mm**	**22.5 mm**
Material	Plastic	Plastic or Metal	Plastic	Plastic
Approvals	UL, UR, CSA, CCC, CE	UL, UR, CSA, CCC, CE	UL, CSA, CCC, CE	UL, UR, CSA, CCC, CE
Degree of Protection	IP66, NEMA Type 4/4X/13	800FM (Metal): IP65/66, NEMA Type 3/3R/4/12/13 800FP (Plastic): IP65/66, NEMA Type 3/3R/4/4X/12/13	IP66, NEMA Type 3/3R/4/4X/12/13	IP66, NEMA Type 4/4X/13
Functions				
Push Buttons	✓	✓	✓	—
Pilot Lights	✓	✓	✓	—
Selector Switches	✓	✓	✓	—
E-Stops	✓	✓	✓	—
Multi-Function	—	✓	—	—
Potentio-meter	—	✓	—	—
Maximum Number of Circuits	Snap action: 4 circuits (2 N.O. & 2 N.C.) Slow make/break: 2 circuits (2 N.C., 1 N.C. & 1 N.O.)	Illuminated: 3-Across - 4 Circuits Non-Illuminated: 6 Circuits	—	—
Mounting Method	Back of Panel Mounting Ring			—
Operating Temperature	–25…+55 °C	–25…+70 °C	–25…+60 °C	–25…+70 °C
Design Life	Momentary: 2 M mech. cycles Maintained: 1 M mech. cycles Selector Switches: 250 K mech. cycles Key Selector Switches: 200 K mech. cycles E-Stops: 100 K mech. cycles	Push Buttons: 10 M mech. cycles Pilot Lights Incandescent: 5…20 K Hrs. Pilot Lights LED: 100 K Hrs. Selector Switches: 300 K mech. cycles E-Stops: 100 K mech. cycles	Incandescent: 5…20 K Hrs. LED: 100 K Hrs.	—
Product Selection	**See page 3-7**	**See page 3-10**	**See page 3-14**	**See page 3-31**

Bulletin	855P	855PC	855PS	855PB	855PD
Description	**Panel Mount Sounder**	**Panel Mount Sounder with LED**	**Panel Mount Strobe**	**Panel Mount Selectable Steady or Flashing LED**	**Panel Mount Dual Circuit Alarms**
Mounting Hole Size	22.5 mm or 30.5 mm with Hole Adapter Kit				
Environmental Ratings	UL Type 4/4X/14, IP65				UL Type 4/4X/13, IP65
Voltages Available	12…24V AC/DC, 120V AC, 240V AC	12V AC/DC, 24V AC/DC, 120V AC, 240V AC			
Illumination Type	—	LED (Flashing or Continuous)	Strobe	LED (Flashing or Continuous)	LED (Flashing or Continuous)
Lens Colors	—	Green, Red, Amber, Blue, Yellow, Clear			
Operating Temperature	–25…+60 °C				
Sound Output	80dB, 100dB or 105dB	98dB or 103dB	—	—	80dB SE, 100 ME, 105 LE
Sound Type	Continuous, Pulsing, or Wobble (LE)		—	—	—
Minimum sound level	<85dB		—	—	< 85dB
Steady State Current	20 mA…57 mA	35 mA…73 mA	20 mA…75 mA	10 mA…150 mA	—
Diameter	30 mm, 45 mm, & 65 mm	45 mm, & 65 mm	30 mm, 45 mm, & 65 mm		
Material	Polycarbonate				
Certifications	cULus listed, CE Marked				
Product Selection	**See page 3-33**	**See page 3-33**	**See page 3-34**	**See page 3-33**	**See page 3-34**

Bulletin	**855T**	**855E**	**855D**
Description	**Control Tower Stack Lights 70 mm**	**Control Tower Stack Lights 50 mm**	**Control Tower Stack Lights 30 mm**
Environmental Ratings	• UL Type 4/4X/13 on all bases, lights piezo style sound and caps (sound and light with sound combo modules are UL Type 12, IP54) • Indoor and outdoor use • IP65	• UL Type 4/4X/13 on all bases, lights and caps sound modules • Indoor and outdoor use • IP65	• UL Type 4/4X/13 • Indoor and outdoor use • IP65
Ease of Assembly, Base Wiring and Lamp Changes	No-tools assemby, "Twist-off" lenses for easy lamp changes, top-mounted terminal block for easy base wiring	No-tools assembly, "Twist-off" lenses for easy lamp changes, top-mounted terminal block for easy base wiring	No assembly required - all towers are assembled, wired, and tested at the factory
Illumination Types	Incandescent, socket-mount LED, or strobe		LED
Lens Colors	Green, Red, Amber, Blue, Yellow, Clear		
Pole-Mount Base Options	10, 25, 40, 60, and 80 cm – aluminium or stainless steel bases	10, 25, 40, 60, and 80 cm bases	Surface, 10 cm metric tube, and 25 cm metric tube
Other Base Mounting Options	Surface-mount bases (surface-mount bases also feature 1/2NPT, PG16 threading options) Vertical-mount bases	Surface-mount bases (surface-mount bases also feature 1/2NPT, PG16 and M20 threading options) Vertical-mount bases	Vertical bracket and conduit adapter
Base Colors	Black or grey base housing		
Sound Options	Transducer style or Piezo style sound modules available in single or dual tone (sound modules are UL Type 12, IP54), Piezo Styles and modules also available in 4/4X	Piezo style sound modules in single and dual tone	
Network Connectivity	Standard or DeviceNet connectivity	Standard connectivity	Standard connectivity
Voltages Available	All modules available in: 12V/24V AC/DC, 120V AC, 240V AC as standard offerings	All modules available in: 12V/24V AC/DC, 120V AC, 240V AC as standard offerings	Bases available in: 24V AC/DC, 240V AC as standard offerings
Junction Box	Surface, Vertical, and Magnetic Mount		
Certifications	cULus Listed and CE on all components		cULus Listed, CE marked
Operating Temperature	–25…+70°C	–25…+50°C	
Material	Polycarbonate - Bases, Cap, Lens Cover, Sound Module Housing, Lens, & Lamp Socket	Polycarbonate (no sound module) - Bases, Cap, Lens Cover, Lens, & Lamp Socket	Polycarbonate - Bases, Cap, Lens Cover, Sound Module Housing, Lens, & Lamp Socket
Product Selection	**See page 3-35**	**See Publication A117**	**See Publication 855D-PP001…**

Bulletin	**855F**	**855H**	**855B**
Description	**Pre-assembled and Pre-wired Tower Lights 70 mm**	**General Purpose Horns and High Performance Horns (with or without Beacons)**	**Mini Square Beacons**
Environmental Ratings	• UL Type 4/4X/13 • IP65	• IP56/Type 13 &13R • (Horn w/Beacon: IP56/Type 13)	• IP66/Type 13
Voltages Available	Bases available in: 24V AC/DC, 240V AC as standard offerings	10-30V DC, 24V AC 50/60 Hz, 110V AC 50/60 Hz, 230V AC 50/60 Hz	12V AC/DC, 24V AC/DC, 110V AC 50/60Hz, 230V AC 50/60 Hz
Voltages Available (Horn w/Beacon)	—	12V DC, 24V DC, 24V AC 50/60 Hz, 110V AC 50/60 Hz, 230V AC 50/60 Hz	—
Illumination Type	LED	Strobe 5 Joule	
Flash Rate	—	—	1 Hz
Lens Colors	Green, Red, Amber, Blue, Yellow, Clear		
Pole-Mount Base Options	Surface, 10 cm metric tube, and 25 cm metric tube Vertical-mount bases	—	—
Operating Temperature	–25 … +60 °C	–25 … +55 °C	
Steady State Current	—	—	12V AC/DC (400/500mA), 24V AC/DC (365/250 mA), 110V AC (100mA), 230V AC (50 mA)
Base Colors	Black or grey housing	—	—
Sound Options	Piezo style sound modules in single and dual tone	Output Level: 100 dB – 126 dB	—
Range	—	10 Tones Range, A Horn 32 Tones Range, B & C Horn 45 Tones Range, D & E	—
Network Connectivity	Standard connectivity	—	—
Volume Adjustable	—	16 dB from max. Range A, B, C 6 dB from max. Range D, E	—
Circuits Available	—	Range A – 2 on DC units, 1 on AC units Range B, C, D, E - 3 on all units	—
Material	Polycarbonate - Bases, Cap, Lens Cover, Sound Module Housing, Lens, & Lamp Socket	Polycarbonate - Horn Cover, Base, Beacon Housing and Lens	
Certifications	cULus Listed, CE marked	cULus, CE	
Product Selection	**See page 3-39**	**See page 3-40**	**See page 3-41**

Bulletin	**855BS (LED)**	**855BS**	**855BM**	**855BL**	**855W**
Description	**Round Beacons**				**Wall Mount Signal Lights**
	90 mm	**90 mm**	**120 mm**	**160 mm**	
Voltages Available	12V AC/DC, 24V AC/DC, 120V AC 50/60Hz, 240V AC 50/60Hz				Base plate available in: 24V AC/DC, 120V AC, 240V AC as standard offerings
Illumination Type	75 W or LED	75 W or 200 W Halogen	15 J or 35 W Halogen	31 J or 50 W Halogen	LED
Flash Rate	1Hz Strobe				—
Lens Colors Available	Red, Green, Amber, Blue, Yellow, Clear				
Environmental Rating	UL Type 4/4X/13, IP65				UL Type 4/4X/13, IP65 Indoor and outdoor use
Operating Temp Range	–25 to…+60 °C	–25 to…+60 °C except Rotating and steady Halogen is –25…+50 °C	–25 to…+60 °C except Rotating is –25…+50 °C	–25 to…+60 °C except Rotating and steady Halogen is –25…+50 °C	–25…+50 °C
Steady State Current	38…300 mA	0.1…1.7 A	0.15…3.2 A	0.21…4.2 A	—
Housing Colors	Black				Grey or chrome cover housing
Sound Options	—	—	—	—	Piezo-style sound module (continuous or pulsing)
Volume Adjustable	—	Strobe, Rotating, steady or Flashing Halogen			—
Connectivity	—	—	—	—	Standard connectivity
Material	Polycarbonate - Horn Cover, Base, Beacon Housing and Lens				Polycarbonate: base & lenses ABS: cover
Certifications	cULus, CE				cULus Listed, CE
Product Selection	**See page 3-42**		**See page 3-42**	**See page 3-42**	**See page 3-43**

Push Buttons & Pilot Light Operators ★

	Round	Square	Rectangle	Large Square
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Momentary, push button/pilot light	**800B-EPA**	**800B-EPB**	**800B-EPC**	**800B-EPD**
Maintained, push button	**800B-EAA**	**800B-EAB**	**800B-EAC**	**800B-EAD**

★ Please order Lenses and LED's separately.

Selector Switch Operators

	2-Position Selector Switches			
	Maintained	*Return from Right*	*Keyed, Maintained*	*Keyed, Return from Right*
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
	800B-SM2A	**800B-SR2A**	**800B-KM2A**	**800B-KR2A**
	3-Position Selector Switches			
	Maintained	*Return from Both*	*Keyed, Maintained*	*Keyed, Return from Both*
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
	800B-SM3A	**800B-SB3A**	**800B-KM3A**	**800B-KB3A**

Emergency Stop Operators

Description	Cat. No.
Emergency stop operator	**800B-MT**

Lens Cap with Diffuser

Cat. No. 800B-ALA3

Cat. No. 800B-ALB4

Cat. No. 800B-ALC5

Cat. No. 800B-ALD6

Lens Color	Round Cat. No.	Square Cat. No.	Rectangle Cat. No.	Large Square Cat. No.
Green	**800B-ALA3**	**800B-ALB3**	**800B-ALC3**	**800B-ALD3**
Red	**800B-ALA4**	**800B-ALB4**	**800B-ALC4**	**800B-ALD4**
Yellow	**800B-ALA5**	**800B-ALB5**	**800B-ALC5**	**800B-ALD5**
Blue	**800B-ALA6**	**800B-ALB6**	**800B-ALC6**	**800B-ALD6**
White	**800B-ALA7**	**800B-ALB7**	**800B-ALC7**	**800B-ALD7**

Illumination ‡

	Description	Lamp Color	Lamp Voltage	Cat. No.
	LED bulb★	Green	12…24V AC/DC	**800B-N3G**
			120V AC	**800B-N5G**
		Red	12…24V AC/DC	**800B-N3R**
			120V AC	**800B-N5R**
		White	12…24V AC/DC	**800B-N3W**
			120V AC	**800B-N5W**

★ Not available for 6V AC/DC.
‡ Incandescent bulbs available. Please visit our website: www.ab.com/catalogs

Contact Block/Latch Module

	Description	Cat. No.
Push Button/Selector Switch		
	1 N.O./1 N.C. snap action	**800B-PS11**
	2 N.O./2 N.C. snap action	**800B-PS22**
Pilot Light		
	Dummy block	**800B-PL**
Emergency Stop/Push Button/Selector Switch		
	1 N.C. slow make/break	**800B-PT01**
	2 N.C. slow make/break	**800B-PT02**
	1 N.O./1 N.C. slow make/break	**800B-PT11**

Accessories

	Description	Cat. No.
	Mounting ring wrench	**800B-AW2**
	Bulb removal tool	**800B-ALR1**
	Lens removal tool	**800B-ALR2**
	Hole plug	**800B-N2**
	Printed circuit board pin socket	**800B-APCB**
	Emergency stop legend plate	**800B-15YE112**
	Square bezel	**800B-ABZB**
	Rectangle bezel	**800B-ABZC**
Cat. No. 800B-ABZB	Large square bezel	**800B-ABZD**

Complete Units

Non-Illuminated Push Buttons, Momentary (Screw Terminal Connections)

	Description	Type of Contact N.O.	Type of Contact N.C.	Color	Construction	Cat. No.
	Flush	1	—	Green	Plastic operator/plastic latch	**800FP-F3PX10**
				Black		**800FP-F2PX10**
				Green	Metal operator/metal latch	**800FM-F3MX10**
				Black		**800FM-F2MX10**
	Extended	—	1	Red	Plastic operator/plastic latch	**800FP-E4PX01**
					Metal operator/metal latch	800FM-E4MX01

Pilot Lights with Integrated LED Modules (Screw Terminal Connections)

	Voltage	Type	Construction	Cat. No.
	24V AC/DC	Green	Plastic Pilot Light / Plastic Latch	**800FP-P3PN3G**
		Red		**800FP-P4PN3R**
		Yellow		**800FP-P5PN3Y**
		Blue		800FP-P6PN3B
		White		**800FP-P7PN3W**
	240V AC	Green		**800FP-P3PN7G**
		Red		**800FP-P4PN7R**
		Yellow		800FP-P5PN7Y
		Blue		800FP-P6PN7B
		White		800FP-P7PN7W
	24V AC/DC	Green	Metal Pilot Light / Metal Latch	**800FM-P3MN3G**
		Red		**800FM-P4MN3R**
		Yellow		800FM-P5MN3Y
		Blue		800FM-P6MN3B
		White		800FM-P7MN3W
	240V AC	Green		800FM-P3MN7G
		Red		800FM-P4MN7R
		Yellow		800FM-P5MN7Y
		Blue		800FM-P6MN7B
		White		800FM-P7MN7W

Complete Units ★, Continued

Non-Illuminated Selector Switches (Screw Terminal Connections)

	Description	Type of Contact N.O.	Type of Contact N.C.	Type	Construction	Cat. No.
	Standard lever, black	1	—	2 position, maintained	Plastic operator/plastic latch	**800FP-SM22PX10**
		1	1	2 position, maintained		800FP-SM22PX11
		1	—	2 position, maintained	Metal operator/metal latch	800FM-SM22MX10
		1	1	2 position, maintained		800FM-SM22MX11
		2	—	3 position, maintained	Plastic operator/plastic latch	**800FP-SM32PX20**
		2	—	3 position, maintained	Metal operator/metal latch	**800FM-SM32MX20**

Non-Illuminated Momentary Multi-Function Operators (Screw Terminal Connections)

	Description	Type of Contact N.O.	Type of Contact N.C.	Color	Construction	Cat. No.
	Multi-function (Flush/extended)	1	1	Green / Red	Plastic operator/plastic latch	800FP-U2E4F3PX11
				Green I / Red 0		800FP-U2EFFEPX11

Emergency Stop Operators Non-Illuminated, Ø40 mm, Red (Screw Terminal Connections)

	Description	Type of Contact N.O.	Type of Contact N.C.	Construction	Cat. No.
	Twist-to-Release	—	1 ‡	Plastic operator/plastic latch	**800FP-MT44PX01S**
		—	1		**800FP-MT44PX01**
		1	1 ‡		**800FP-MT44PX11S**
		1	1		800FP-MT44PX11

★ For complete units not listed and configuration assistance, see RAISE product selection software.
‡ With Self-Monitoring contact block.

Momentary Push Button Operators, Non-Illuminated — Flush, Extended

Flush Operator

Extended Operator

	Flush		Extended	
	Plastic	Metal	Plastic	Metal
Color	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Black	**800FP-F2**	**800FM-F2**	**800FP-E2**	**800FM-E2**
Green	**800FP-F3**	**800FM-F3**	800FP-E3	**800FM-E3**
Red	**800FP-F4**	**800FM-F4**	**800FP-E4**	**800FM-E4**

Momentary Push Button Operators, Non-Illuminated — With Two-Color Molded Legend Caps ★

Flush Operator

			Flush	
			Plastic	Metal
Button Color	Text Color	Legend	Cat. No.	Cat. No.
Green	White	START	**800FP-F301**	**800FM-F301**
		I	**800FP-F306**	**800FM-F306**
Black	White	→	**800FP-F208**	**800FM-F208**

			Extended	
			Plastic	Metal
Button Color	Text Color	Legend	Cat. No.	Cat. No.
Red	White	STOP	**800FP-E402**	**800FM-E402**
		O	**800FP-E405**	**800FM-E405**
Black	White	→	800FP-E208	800FM-E208

Reset Operators ‡

Reset Operator

		Flush — Round	
		Plastic	Metal
Button Color	Legend Text	Cat. No.	Cat. No.
Blue	R	**800FP-R611**	**800FM-R611**

★ For custom laser-engraved legend cap, order “no cap” option plus custom laser-engraved cap, see publication 800F-SG001...

‡ For reset rods please refer to A117 catalogue

Momentary Push Button Operators, Illuminated — Flush, Extended ★

Flush Operator

Extended Operator

	Flush		Extended	
	Plastic	Metal	Plastic	Metal
Color	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Green	**800FP-LF3**	**800FM-LF3**	**800FP-LE3**	**800FM-LE3**
Red	**800FP-LF4**	**800FM-LF4**	**800FP-LE4**	**800FM-LE4**
Yellow	**800FP-LF5**	**800FM-LF5**	**800FP-LE5**	800FM-LE5
Blue	**800FP-LF6**	**800FM-LF6**	—	—
Clear	**800FP-LF7**	**800FM-LF7**	**800FP-LE7**	**800FM-LE7**

Alternate Action Operators, Non-Illuminated

Flush Operator

	Plastic	Metal
Color	Cat. No.	Cat. No.
Green	**800FP-FA3**	800FM-FA3
Red	800FP-FA4	800FM-FA4

Alternate Action Operators, Illuminated

Flush Operator

	Plastic	Metal
Color	Cat. No.	Cat. No.
Green	**800FP-LFA3**	**800FM-LFA3**
Red	**800FP-LFA4**	**800FM-LFA4**

★ For custom laser-engraved operator, order operator with applicable lens cap color plus custom laser-engraved diffuser, see publication 800F-SG001**...**

Pilot Lights ★

Plastic Pilot Light

Metal Pilot Light

Color	Plastic Cat. No.	Metal Cat. No.
Green	**800FP-P3**	**800FM-P3**
Red	**800FP-P4**	**800FM-P4**
Yellow	**800FP-P5**	**800FM-P5**
Clear	**800FP-P7**	**800FM-P7**
Amber	**800FP-P0**	**800FM-P0**

★ For custom laser-engraved pilot light, order pilot light with applicable lens cap color plus custom laser-engraved diffuser, see publication 800F-SG001...

800FD Monolithic Pilot Lights — LED

Lens & LED Color	Voltage 24V AC/DC Cat. No.	 240V AC Cat. No.
Green	**800FD-P3N3**	**800FD-P3N7**
Red	**800FD-P4N3**	**800FD-P4N7**
Yellow	**800FD-P5N3**	800FD-P5N7

800FD Monolithic Pilot Lights — Incandescent

Lens Color	Voltage 24V AC/DC Cat. No.
Green	**800FD-P3D3**
Red	**800FD-P4D3**
Yellow	800FD-P5D3

800FD Monolithic 2-Position Push-Pull/Twist-to-Release Mushroom Operators, Non-Illuminated

Color	Contacts	Cat. No.
Red	1 N.C.	**800FD-MT44X01**
	2 N.C.	**800FD-MT44X02**
	1 N.C., 1 N.O.	**800FD-MT44X11**

800FD Momentary Push Button Operators, Non-Illuminated

Operator Type	Cap Color	Text	Contact Configuration		
			1 N.O.	1 N.C.	1 N.O. & 1 N.C.
			Cat. No.	Cat. No.	Cat. No.
Flush	Black	—	**800FD-F2X10**	800FD-F2X01	800FD-F2X11
	Green	—	800FD-F3X10	800FD-F3X01	800FD-F3X11
	Red	—	800FD-F4X10	800FD-F4X01	800FD-F4X11
	Green	I			800FD-F306X11
	Red	O			800FD-F405X11
	Green	START			800FD-F301X11
	Red	STOP			800FD-F402X11
	Blue	R			800FD-F611X11

800FD Selector Switch Operators, Non-Illuminated

Operator Type	Contact Configuration	2-Postition	3-Postition
		Cat. No.	Cat. No.
Maintained	1 N.O.	800FD-SM22X10	—
	1 N.C.	800FD-SM22X01	—
	2 N.O.	800FD-SM22X20	**800FD-SM32X20**
	2 N.C.	800FD-SM22X02	800FD-SM32X02
	1 N.O. & 1 N.C.	800FD-SM22X11	800FD-SM32X11
Spring Return From Both	2 N.O.	—	800FD-SB32X20
	2 N.C.	—	800FD-SB32X02
	1 N.O. & 1 N.C.	—	800FD-SB32X11

800FD Plastic Enclosures for use with Monolithic Components

- 1-hole enclosures designed for use with 800FD Monolithic Operators (or with 800F Latch Mount Contact Blocks / LED's)
- Only 71 x 71 mm width
- Available in gray or yellow colour
- IP66 / NEMA Type 4X, 13
- PG conduit only

800FD-1PY

Description	Enclosure Type	Color	Cat. No.
Plastic Enclosure	PG Knockouts	Gray	**800FD-1P**
		Yellow	**800FD-1PY**

Non-Illuminated Selector Switches, 2-Positions

Standard Knob

Target Table and Operator Position ★			
Switching Angle	Contact Type		
60°	N.O.	O	X
	N.C.	X	O

Note: X = Closed/O = Open

Color	Operator Type	Standard Knob	
		Plastic	Metal
		Cat. No.	Cat. No.
Black with White Insert		**800FP-SM22**	**800FM-SM22**

Illuminated Selector Switch Operators, 2-Positions ‡

Standard Knob

Target Table and Operator Position ★			
Switching Angle	Contact Type		
60°	N.O.	O	X
	N.C.	X	O

Note: X = Closed/O = Open

Color	Operator Type	Standard Knob	
		Plastic	Metal
		Cat. No.	Cat. No.
Green		**800FP-LSM23**	**800FM-LSM23**
Red		**800FP-LSM24**	**800FM-LSM24**
Amber		800FP-LSM20	800FM-LSM20

★ Target table for spring return from left is reversed from what is shown in the table.
‡ LED module required for illumination.

Non-Illuminated Selector Switches, 3-Positions

Standard Knob

Knob Lever

Target Table and Operator Position (Switching angle 60°), see publication 800F-SG001...

Color	Operator Type	Standard Knob	
		Plastic	Metal
		Cat. No.	Cat. No.
Black with White Insert		**800FP-SM32**	**800FM-SM32**
		800FP-SB32	**800FM-SB32**

Color	Operator Type	Knob Lever	
		Plastic	Metal
		Cat. No.	Cat. No.
Black with White Insert		**800FP-HM32**	**800FM-HM32**
		800FP-HB32	**800FM-HB32**

Non-Illuminated Selector Switches, 4 Positions

Standard Knob

Color	Standard Knob — Maintained	
	Plastic	Metal
	Cat. No.	Cat. No.
Black with White Insert	**800FP-SM42**	800FM-SM42

Illuminated Selector Switch Operators, 3-Positions ★

Target Table and Operator Position
(Switching angle 60°), see publication 800F-SG001...

Standard Knob

Operator Type	Green	
	Plastic	Metal
	Cat. No.	Cat. No.
	800FP-LSM33	**800FM-LSM33**
	800FP-LSR33	800FM-LSR33
	800FP-LSL33	800FM-LSL33
	800FP-LSB33	**800FM-LSB33**

Operator Type	Red	
	Plastic	Metal
	Cat. No.	Cat. No.
	800FP-LSM34	800FM-LSM34
	800FP-LSR34	800FM-LSR34
	800FP-LSL34	800FM-LSL34
	800FP-LSB34	800FM-LSB34

Operator Type	Yellow	
	Plastic	Metal
	Cat. No.	Cat. No.
	800FP-LSM35	800FM-LSM35
	800FP-LSR35	800FM-LSR35
	800FP-LSL35	800FM-LSL35
	800FP-LSB35	800FM-LSB35

★ LED module required for illumination.

Key Operated Selector Switches, 2-Positions, Non-Illuminated ★‡

Key Selector Switch

Key Selector Switch

Target Table and Operator Position			
Switching Angle	Contact Type	↖	↗
60°	N.O.	O	X
	N.C.	X	O

Note: X = Closed/O = Open

Key Removal Position	Operator Type	Key Selector Switch Operators	
		Plastic	Metal
		Cat. No.	Cat. No.
Left		**800FP-KM21**	**800FM-KM21**
Both		**800FP-KM23**	**800FM-KM23**

Note: For Ronis replacement keys, see publication 800F-SG001**...**

Key Operated Selector Switches, 3-Positions, Non-Illuminated ★‡

Key Selector Switch

Key Selector Switch

Target Table and Operator Position (Switching angle 60°), see publication 800F-SG001…

Key Removal Position	Operator Position	Key Selector Switch Operators	
		Plastic	Metal
		Cat. No.	Cat. No.
Left		**800FP-KM31**	800FM-KM31
All		**800FP-KM33**	**800FM-KM33**
Center		**800FP-KM34**	**800FM-KM34**
Center		**800FP-KB34**	**800FM-KB34**

Note: For Ronis replacement keys, see publication 800F-SG001**...**

★ Keyed operators are IP66, Type 4/13.
‡ Not intended for high security applications. Interoperability is possible with certain key/cylinder lock combinations. Please consult your local sales office for interoperability information.

Emergency Stop Operators ★

Non-Illuminated

Twist-to-Release, Push-Pull

Emergency Stop 60 mm, Non-Illuminated, Twist-to-Release

Emergency Stop 40 mm, Non-Illuminated, Twist-to-Release

Color	Size [mm]	Twist-to-Release (Trigger Action)	
		Plastic	Metal
		Cat. No.	Cat. No.
Red	30	**800FP-MT34**	**800FM-MT34**
	40	**800FP-MT44**	**800FM-MT44**
	60	**800FP-MT64**	**800FM-MT64**

Color	Size [mm]	Push-Pull (Trigger Action)	
		Plastic	Metal
		Cat. No.	Cat. No.
Red	40	**800FP-MP44**	**800FM-MP44**

Key Release

Emergency Stop 40 mm, Non-Illuminated, Key Release

Color	Size [mm]	Ronis Key Lock (Trigger Action)	
		Plastic	Metal
		Cat. No.	Cat. No.
Red	40	**800FP-MK44**	**800FM-MK44**

★ All emergency stop operators are EN 418 compliant.

Emergency Stop Operators, continued ★

Illuminated

Twist-to-Release, Push-Pull ‡

Emergency Stop 40 mm, Illuminated, Twist-to-Release

Color	Size [mm]	Twist-to-Release (Trigger Action)	
		Plastic	Metal
		Cat. No.	Cat. No.
Red	40	**800FP-LMT44**	**800FM-LMT44**
Red	60	800FP-LMT64	800FM-LMT64

Color	Size [mm]	Push-Pull (Trigger Action)	
		Plastic	Metal
		Cat. No.	Cat. No.
Red	30	800FP-LMP34	800FM-LMP34
	40	**800FP-LMP44**	**800FM-LMP44**
	60	800FP-LMP64	800FM-LMP64

★ All emergency stop operators are EN 418 compliant.
‡ LED module required for illumination.

90 mm Half Dome Mushroom Operators, Push-Pull, Non-Illuminated

90 mm Operators Push-Pull (Trigger Action)

Color	Size [mm]	Push-Pull (Trigger Action)
		Plastic
		Cat. No.
Black	90	800FP-MP92
Red		**800FP-MP94**

90 mm Half Dome Mushroom Operators, Push-Pull, Illuminated

Color	Size [mm]	Push-Pull (Trigger Action)
		Plastic
		Cat. No.
Red	90	**800FP-LMP94**

Momentary Push Button Operators, Non-Illuminated — Mushroom ★

60 mm Jumbo Mushroom

40 mm Mushroom

Color	Size [mm]	Plastic Cat. No.	Metal Cat. No.
Black	40	**800FP-MM42**	**800FM-MM42**
Green		**800FP-MM43**	**800FM-MM43**
Red		**800FP-MM44**	**800FM-MM44**
Yellow		800FP-MM45	**800FM-MM45**
Red	60	800FP-MM64	800FM-MM64
Yellow		800FP-MM65	800FM-MM65
Red	90	**800FP-MM94**	—
Yellow		**800FP-MM95**	—

Momentary Push Button Operators, Illuminated — Mushroom ★

40 mm Mushroom

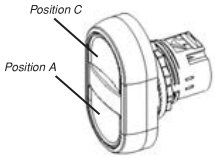
Color	40 mm Mushroom	
	Plastic Cat. No.	Metal Cat. No.
Green	**800FP-LMM43**	800FM-LMM43
Red	800FP-LMM44	800FM-LMM44
Yellow	800FP-LMM45	800FM-LMM45

★ Momentary mushroom operators are IP65 rated.

2-Function Momentary Multi-Operator, Non-Illuminated ★

2-Function Momentary Multi-Operator, Non-Illuminated

Position 1 of the latch (left position when viewed from the back) corresponds to position C of the operator. Position 2 of the latch (right position when viewed from the back) corresponds to position A of the operator.

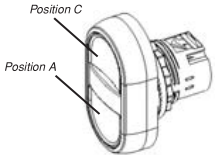


Position A			Position C			2-Function Multi-Operator
Color	Type	Text	Color	Type	Text	Cat. No.
Red	Extended	Blank	Green	Flush	Blank	**800FP-U2E4F3**
		O			I	**800FP-U2EFFE**
		STOP			START	800FP-U2EBFA

2-Function Momentary Multi-Operator, Illuminated ★‡

2-Function Momentary Multi-Operator, Illuminated

Position 1 of the latch (left position when viewed from the back) corresponds to position C of the operator. Position 2 of the latch (right position when viewed from the back) corresponds to position A of the operator. Position 3 of the latch (center position) is reserved for the power module.

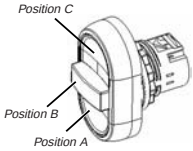


Position A			Position B	Position C			2-Function Multi-Operator
Color	Type	Text	Type	Color	Type	Text	Cat. No.
Red	Extended	Blank	White Pilot Lights	Green	Flush	Blank	**800FP-LU2E4F3**
		O				I	**800FP-LU2EFFE**
		STOP				START	**800FP-LU2EBFA**

3-Function Momentary Multi-Operator, Non-Illuminated ★

3-Function Momentary Multi-Operator, Non-Illuminated

Position 1 of the latch (left position when viewed from the back) corresponds to position C of the operator. Position 2 of the latch (right position when viewed from the back) corresponds to position A of the operator. Position 3 of the latch (center position) corresponds to position B of the operator.



Position A			Position B			Position C			3-Function Multi-Operator
Color	Type	Text	Color	Type	Text	Color	Type	Text	Cat. No.
Green	Flush	Blank	Red	Extended	Blank	Green	Flush	Blank	800FP-U3F3F34

★ No Type 13 rating.

Single Turn Potentiometer Assembly ♣Δ♦

Potentiometer Assembly

Single Turn Potentiometer Assembly	
Resistive Element	**Cat. No.**
None (Operator Only)♣	**800FP-POT**
150	800FP-POT1
500	800FP-POT2
1000	**800FP-POT3**
2500	**800FP-POT4**
5000	**800FP-POT5**
10 000	**800FP-POT6**

♣ The 800FP-POT is a complete operator assembly supplied without the resistive element, used with potentiometers having a shaft diameter of 6.0 mm (0.23 in.) and a shaft length of 50.0 mm (1.97 in.), or a shaft diameter of 6.4 mm (0.25 in.) and a shaft length of 22.5 mm (0.88 in.). This operator is used with Type "J" potentiometers only.

Δ Rated 300V AC/DC, 2 W max.

♦ A latch is not needed.

Back-of-Panel Components

	Description		PQ	Cat. No.
	Metal Mounting Latch These are zinc-plated, metal die cast mounting latches. **Note:** Sold only in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces.		10	**800F-ALM**
	Note: Sold only in multiples of 100. Order (quantity of) 100 to receive one package of 100 pieces.		100	800F-ALM-BP
	Plastic Mounting Latch **Note:** Sold only in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces.		10	**800F-ALP**
	Note: Sold only in multiples of 100. Order (quantity of) 100 to receive one package of 100 pieces.		100	**800F-ALP-BP**
	Contact Block **Note:** Sold only in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Latch not included.	N.O.	10	**800F-X10**
		N.C.		**800F-X01**
		N.O.E.M.		**800F-X10E**
		N.C.L.B.		**800F-X01L**
		Self-Monitoring		**800F-X01S**
		N.O. low voltage — *QuadCONNECT™*		**800F-X10V**
		N.C. low voltage — *QuadCONNECT™*		**800F-X01V**
		Dual circuit of 2 N.O.		**800F-X20D**
		Dual circuit of 2 N.C.		**800F-X02D**
		Dual circuit of 1 N.O.-1 N.C.		**800F-X11D**
		N.O. spring-clamp		**800F-Q10**
		N.C. spring-clamp		**800F-Q01**
	Note: Sold only in multiples of 100. Order (quantity of) 100 to receive one package of 100 pieces. Latch not included.	N.O.	100	**800F-X10-BP**
		N.C.		**800F-X01-BP**
	Clear silicone **Protective Boot** used on illuminated and non-illuminated, flush and extended operators.	Flush push button	10	**800F-AB7**
		Extended push button	10	**800F-ABE7**
		3-position multi-function	10	800F-AUB1
		2-position multi-function	10	**800F-AUB2**

PQ = Package Quantity

	Description			Cat. No.
	Incandescent Module For use with pilot lights, push buttons, and momentary mushroom operators. **Note:** Sold in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Latch not included.	No bulb		**800F-D0C**
		24V AC/DC		**800F-D3C**
		120V AC/DC		**800F-D5C**
	Integrated LED Module For use with all illuminated devices. For best results, LED should match lens color. For amber operators, use yellow LED. **Note:** Sold in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Latch not included.	24V AC/DC	★	800F-N3x
		120V AC	★	800F-N5x
		240V AC	★	800F-N7x
		24V AC/DC spring-clamp	★	800F-Q3x
		120V AC spring-clamp	★	800F-Q5x
		240V AC spring-clamp	★	800F-Q7x
	Base Mounted Contact Block Base mounted contact blocks can be used in plastic or metal enclosures. **Note:** Sold only in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Latch not included.	N.O.		**800F-BX10**
		N.C.		**800F-BX01**
		N.O.E.M.		800F-BX10E
		N.C.L.B.		800F-BX01L
		N.O. low voltage — *QuadCONNECT*™		800F-BX10V
		N.C. low voltage — *QuadCONNECT*™		800F-BX01V
		N.O. spring-clamp		**800F-BQ10**
		N.C. spring-clamp		**800F-BQ01**
	Base Mounted Integrated LED Module Base mounted modules can be used in plastic or metal enclosures. For best illumination results, LED should match lens color. **Note:** Sold in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Latch not included.	24V AC/DC	★	800F-BN3x
		120V AC	★	800F-BN5x
		240V AC	★	800F-BN7x
		24V AC/DC spring-clamp	★	800F-BQ3x
		120V AC spring-clamp	★	800F-BQ5x
		240V AC spring-clamp	★	800F-BQ7x
	Diode Module For lamp checking circuits. Latch not included.	up to 250V AC		**800F-XD7**
	Null Block For wire terminations only.	up to 600V AC		800F-NX70

★ To complete the cat. no., replace the **x** with one of the following letters for the desired color:
Y = Yellow, **R** = Red, **G** = Green, **B** = Blue, **W** = White.

Plastic and Metal Enclosures

Plastic Enclosure

Metal Enclosure

Pendant Station

Plastic Enclosures (Latch or Base Mounting)

- Feed-through design
- Accepts two-piece snap-in legends
- One-hole enclosure accepts 60 mm emergency stop legends
- UL Listed, CSA Certified

Metal Enclosures (Latch or Base Mounting)

- Feed-through design
- Accepts two-piece snap-in legends

Pendant Stations

- Blank legend cap marking
- Connector not included. For ordering information, see accessories in publication 800F-SG001...

Type	Enclosures			
	Plastic (IP66, 4/4X/13)		Metal — Die Cast (IP66, 4/13)	
	PG Knockouts	Metric Knockouts	PG Knockouts	Metric Knockouts
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
1-hole	**800F-1PP**	**800F-1PM**	**800F-1MP**	**800F-1MM**
2-hole	**800F-2PP**	**800F-2PM**	**800F-2MP**	**800F-2MM**
3-hole	**800F-3PP**	**800F-3PM**	**800F-3MP**	**800F-3MM**
4-hole	**800F-4PP**	**800F-4PM**	—	—
5-hole	—	—	800F-5MP	**800F-5MM**
6-hole	**800F-6PP**	**800F-6PM**	—	—
1-hole (Yellow)	**800F-1YP**	**800F-1YM**	**800F-1MYP**	**800F-1MYM**

Type	Pendants
	Yellow Plastic (IP66, 4/4X/13)
	Cat. No.
1 hole in face	800F-P15
2 holes in face	**800F-P25**
1 hole in bottom	800F-P35
1 hole in face / 1 hole in bottom	800F-P45

Assembled Stations

1-Hole Plastic Enclosure with E-Stop Operator

1-Hole Plastic Yellow Enclosure, Metric Knockouts		
	Twist-To Release Operator	Key Release Operator
Contact Configuration	Cat. No.	Cat. No.
1 N.C.	**800F-1YM1**	**800F-1YM4**
1 N.O. / 1 N.C.	**800F-1YM2**	**800F-1YM5**
2 N.C.	**800F-1YM3**	800F-1YM6

1-Hole Metal Enclosure		
	Twist-To Release Operator	Key Release Operator
Contact Configuration	Cat. No.	Cat. No.
1 N.C.	**800F-1MM1**	800F-1MM4
1 N.O. / 1 N.C.	**800F-1MM2**	800F-1MM5
2 N.C.	**800F-1MM3**	800F-1MM6

1-Hole Plastic Yellow Enclosure, Metric Knockouts		
Contact Configuration	Operator Type	Cat. No.
1 N.C.	Red half dome	**800F-1YM1HD**
1 N.O./1 N.C.		**800F-1YM2HD**
2 N.C.		**800F-1YM3HD**

1-Hole Plastic Grey Enclosure with Options and 1 NO Contact	
Options	Cat. No.
Black Push Button - No Text	**800F-1PP1**
"0-1" 2-Position Selector Switch	800F-1PP2

2-Hole Plastic Grey Enclosure with Options and 1 N.O./1 N.C. Contact	
Options	Cat. No.
START and STOP Push Buttons	**800F-2PP1**

Legend Plates ★

Emergency Stop Legend Plates

800F – 15 YS E112

a *b* *c*

800F-15YS…

800F-15Y…

a

Size	
Code	**Description**
15	60 mm round
16	90 mm round

b

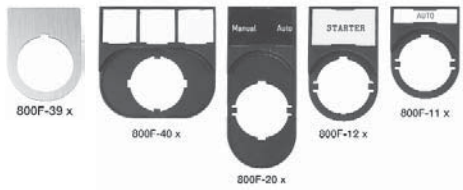
Color	
Code	**Description**
Y	Yellow (30 mm) ‡
YS	Yellow (22.5 mm) §

★ Sold only multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces.
‡ Must be used with base mount contact blocks and trim washer.
§ Must be used with latch mounted contact blocks only.

c

Text	
Code	**Description**
E112	EMERGENCY STOP
F112	ARRÊT D'URGENCE
G112	NOT AUS
T112	ARRESTO EMERGENZA
S112	PARADA DE EMERGENCIA
B112	EMERGENCY STOP, ARRÊT D'URGENCE, PARADA DE EMERGENCIA
M112	NOT AUS, ARRESTO EMERGENZA, ARRÊT D'URGENCE
D112	NOODSTOP
N112	NÖDSTOPP, EMERGENCY STOP
W112	NØDSTOPP, EMERGENCY STOP
A112	NØSTOP
L112	NEYÐARSTOPP, NEYÐARSTOPP
H112	NÖD-STOP, HÄTÄ-SEIS, NÖD-STOP

Legend Plates and Frames



Type	Description	Cat. No. (Blank)
30 x 40 mm 2-piece snap-in plate and frame	Black with white text	**800F-11BE100**
30 x 50 mm 2-piece snap-in plate and frame	Black with white text	**800F-12BE100**
30 x 40 mm snap-in plate only	Black with white text	**800F-17BE100**
30 x 50 mm snap-in plate only	Black with white text	**800F-18BE100**

Legend Plate Frame — 2-Piece Snap-In ♣			
Type	**Cat. No.**	**Type**	**Cat. No.**
30 x 40 mm	**800F-110**	30 x 60 mm	**800F-200**
30 x 50 mm	**800F-120**	Special multifunction	**800F-400**

♣ Blank legends and frames sold only in multiples of 10. Order (quantity of) 10 to receive one package of 10 pieces. Legends with standard text/symbols or custom text are packaged in quantities of 1.

See Publication 800F-SG001… for complete product information.

Bulletin 800FC — Configured Pendant Stations

Cat. No. 800FC-3Z

Cat. No. 800FC-7Z

Enclosure Type	Description		Cat. No.
3-hole	Pendants — Yellow Plastic IP66 ★	‡	**800FC-3Z**
5-hole		§	**800FC-5Z**
7-hole		§	800FC-7Z
9-hole		§	800FC-9Z

★ Housings supplied with cabel sleeve, hanger ring, cable clamp, wire guides, and gasket.
‡ Operator in position 1 is mounted horizontally. Operators in positions 2 and 3 are mounted vertically.
§ All operators are mounted horizontally.

1-, 2-, and 3-Speed Operators

800FP – C **A** **1** **U243**
a *b* *c*

a

Operator Type			
Code	Description	Code	Description
A	1-speed single arrow	B	2-speed
D	1-speed double arrow	C	3-speed ‡

b

Cap Color	
Code	Description
1	White
2	Black

‡ Proper contact block assembly of these devices is required. Please see contact block information on page 3-32.

c

	Valid with *Table a* Selections:	Symbol Description★ Code	Vertical Mounting Black	Vertical Mounting White	Code	Horizontal Mounting Black	Horizontal Mounting White
	A, B, C	U100	Blank	Blank	U100	Blank	Blank
			One-Speed Operators				
	A	U241	DOWN	UP	U243	RIGHT	LEFT
		U244	REVERSE	FORWARD	U246	FORWARD	REVERSE
		U700	LEFT	RIGHT	U700	UP	DOWN
	D	U261	DOWN FAST	UP FAST	U263	RIGHT FAST	LEFT FAST
		U264	REVERSE FAST	FORWARD FAST	U266	FORWARD FAST	REVERSE FAST
		U260	LEFT FAST	RIGHT FAST	U260	UP FAST	DOWN FAST
			Two-Speed Operators				
	B	U271	2-speed DOWN	2-speed UP	U273	2-speed RIGHT	2-speed LEFT
		U274	2-speed REVERSE	2-speed FORWARD	U276	2-speed FORWARD	2-speed REVERSE
		U270	2-speed LEFT	2-speed RIGHT	U270	2-speed UP	2-speed DOWN
			Three-Speed Operators				
	C	U291	3-speed DOWN	3-speed UP	U293	3-speed RIGHT	3-speed LEFT
		U294	3-speed REVERSE	3-speed FORWARD	U296	3-speed FORWARD	3-speed REVERSE
		U290	3-speed LEFT	3-speed RIGHT	U290	3-speed UP	3-speed DOWN

Note: Please see page 3-32 for proper contact block configurations.
★ Text (DOWN, UP, LEFT, etc.) indicates arrow direction. Text is **not** printed on operators.

1-, 2-, and 3-Speed Contact Block Assemblies

Operator Type	Interlock Type		Composite Cat. No.
1-speed	None		800F-PX10E
	Electrical		**800F-PX11C**
	Mechanical♦		**800F-LX20C**
	Electrical & Mechanical♦		**800F-LX22C**
2-speed	None		**800F-PX20C**
	Electrical		**800F-PX21C**
	Mechanical♦		**800F-LX40C**
	Electrical & Mechanical♦		**800F-LX42C**
3-speed	None	♣	800F-PX30C
	Mechanical♦	♣	**800F-LX60C**

♦ When ordering separate components, two pieces of each contact block must be ordered, one for each operator.
♣ Contact blocks come preassembled onto latch.

Accessories

	Description		PQ	Cat. No.
	Mechanical interlock latch		1 ★	**800FC-ALP**
	Replacement wire guide		2	800FC-AWG
	Insulated side jumper		50	1492-SJ5A-24
			50	1492-SJ5A-10
	1-, 2-, and 3-speed contact blocks	NOEM ‡	10	**800F-X10E**
		NOLM §	10	**800F-X10N**
		NOEEM ♦	10 △	**800F-X10M**
	Cable sleeve	3-hole (M20 x 1.5)	1	**800FC-AS3**
		5-…9-hole (M32 x 1.5)	1	**800FC-AS5**

★ Only for use with 1-, 2-, and 3-speed operators.
‡ First contact closure of 1- and 2-speed operators, second contact closure for 3-speed operators.
§ Second contact closure of 2-speed operators and third contact closure of 3-speed operators.
♦ First contact closure of 3-speed operators.
△ For proper operation, **Cat. No. 800F-X10M** must be mounted in position 3 of the mechanical or standard latch.
PQ = Package Quantity

855P — Panel Mount Sounder

30 mm Panel Mount Sounder

45 mm Panel Mount Sounder

65 mm Panel Mount Sounder

Housing Color	Voltage	Size [mm]	Cat. No.
Black	12…24V AC/DC	30	**855P-B30SE22**
		45	**855P-B30ME22**
		65	**855P-B30LE22**
	240V AC	30	**855P-B20SE22**
		45	**855P-B20ME22**
		65	855P-B20LE22

855PC — Panel Mount Sounder with LED

45 mm Panel Mount Sounder with LED

65 mm Panel Mount Sounder with LED

Housing Color	Voltage	Size [mm]	Lens Color	Cat. No.
Black	24V AC/DC	45	Green	855PC-B24ME322
			Red	**855PC-B24ME422**
		65	Green	855PC-B24LE322
			Red	**855PC-B24LE422**
	240V AC	45	Green	855PC-B20ME322
			Red	855PC-B20ME422
		65	Green	855PC-B20LE322
			Red	**855PC-B20LE422**

855PB — Panel Mount Selectable Steady or Flashing LED

30 mm Panel Mount LED

45 mm Panel Mount LED

65 mm Panel Mount LED

Housing Color	Voltage	Size [mm]	Lens Color	Cat. No.
Black	24V AC/DC	30	Green	**855PB-B24SE322**
			Red	**855PB-B24SE422**
		45	Green	855PB-B24ME322
			Red	**855PB-B24ME422**
		65	Green	**855PB-B24LE322**
			Red	**855PB-B24LE422**

855PS — Panel Mount Strobe

30 mm Panel Mount Strobe

45 mm Panel Mount Strobe

65 mm Panel Mount Strobe

Housing Color	Voltage	Size [mm]	Lens Color	Cat. No.
Black	24V AC/DC	30	Green	855PS-B24SE322
			Red	855PS-B24SE422
			Amber	855PS-B24SE522
	12…24V AC/DC	45	Green	855PS-B30ME322
			Red	855PS-B30ME422
			Amber	855PS-B30ME522
		65	Green	855PS-B30LE322
			Red	**855PS-B30LE422**
			Amber	855PS-B30LE522
Black	240V AC	30	Green	855PS-B20SE322
			Red	855PS-B20SE422
			Amber	855PS-B20SE522
		45	Green	855PS-B20ME322
			Red	855PS-B20ME422
			Amber	855PS-B20ME522
		65	Green	855PS-B20LE322
			Red	855PS-B20LE422
			Amber	855PS-B20LE522

Bulletin 855PD — Panel Mount Dual Circuit Alarms

Half Lens Illumination

Full Lens Illumination

Combined Sounder with LED Beacon

Function	Voltage	Size [mm]	Lens Color	Cat. No.
Sounder with LED	24V AC/DC	45	Green	855PD-B24MEC1322
			Red	855PD-B24MEC1422
		65	Green	855PD-B24LEC1322
			Red	855PD-B24LEC1422
Half-lens, Steady LED Beacon	24V AC/DC	30	Red & Green	855PD-B24SEH4322
		45	Red & Green	855PD-B24MEH4322
		65	Red & Green	855PD-B24LEH4322
Full-lens, Steady LED Beacon	24V AC/DC	30	Red & Green	855PD-B24SEF3422
		45	Red & Green	855PD-B24MEF3422
		65	Red & Green	855PD-B24LEF3422

Control Tower™ Stack Lights

Light Modules

Red Flashing Incandescent (Black Housing)
240V AC Full Voltage

Voltage	Color	Illumination Type	Black Housing Color Cat. No. ★
24V AC/DC	Green	Steady Incandescent	**855T-B24DN3**
		Flashing Incandescent	**855T-B24FN3**
		Steady LED	**855T-B24TL3**
	Red	Steady Incandescent	**855T-B24DN4**
		Flashing Incandescent	**855T-B24FN4**
		Strobe	**855T-B24BR4**
	Amber	Steady Incandescent	**855T-B24DN5**
		Flashing Incandescent	**855T-B24FN5**
		Steady LED	**855T-B24TL5**
240V AC	Green	Steady Incandescent	**855T-B20DN3**
		Flashing Incandescent	855T-B20FN3
		Steady LED	**855T-B20TL3**
	Red	Steady Incandescent	**855T-B20DN4**
		Flashing Incandescent	**855T-B20FN4**
		Strobe	**855T-B20BR4**
	Amber	Steady Incandescent	**855T-B20DN5**
		Flashing Incandescent	**855T-B20FN5**
		Steady LED	855T-B20TL5

★ Refer to configurator options for additional selections.

Single-Circuit Light Modules/with Sound ★

Red Strobe/Sound Combination Module (Black Housing)
240V AC Full Voltage

Description
All modules contain a selected light option with a sound device that operates simultaneously. The sound module can be switched to pulsing or continuous with a dip switch located inside of the module. Volume is 92…107dB. UL Type 4/4X/13, IP65.

Voltage	Illumination Type	Lamp Color	Black Housing Color Cat. No. ‡
24V AC/DC	Steady Incandescent	Green	855T-B24DC3
	Flashing Incandescent		855T-B24FC3
	Steady LED		855T-B24TC3
	Steady Incandescent	Red	**855T-B24DC4**
	Flashing Incandescent		**855T-B24FC4**
	Strobe		855T-B24BC4
	Steady Incandescent	Amber	855T-B24DC5
	Flashing Incandescent		**855T-B24FC5**
	Steady LED		855T-B24TC5
240V AC	Steady Incandescent	Green	855T-B20DC3
	Flashing Incandescent		855T-B20FC3
	Steady LED		855T-B20TC3
	Steady Incandescent	Red	855T-B20DC4
	Flashing Incandescent		855T-B20FC4
	Strobe		855T-B20BC4
	Steady Incandescent	Amber	855T-B20DC5
	Flashing Incandescent		855T-B20FC5
	Steady LED		855T-B20TC5

★ The light/with sound module uses one circuit in a stack. It can be used with a maximum of four light modules and must be placed in the top position of a stack.
‡ Refer to configurator options for additional selections.

§ Refer to configurator options for additional selections.

Transducer Style Sound Modules

UL Type 12, IP54. Volume is 80...103dB.

Transducer Style Single Tone/Single Circuit Sound Module (Black Housing) 24V AC/DC Full Voltage

Voltage	Module Type	Tone	Black Housing Color Cat. No. §
24V AC/DC	Single Tone Transducer Style	Preset as Triangle Tone	**855T-B24SA1**
	Dual Tone Transducer Style	Preset as Triangle Tone/Continuous Tone	**855T-B24TA1**
240V AC	Single Tone Transducer Style	Preset as Triangle Tone	**855T-B20SA1**
	Dual Tone Transducer Style	Preset as Triangle Tone/Continuous Tone	**855T-B20TA1**

§ Refer to configurator options for additional selections.

Standard Stack Light Bases IP65

Surface Mount — PG16 Conduit Mount with Cap (Black)

Vertical Mount Base with Cap (Grey)

25 cm Aluminum Pole Mount Base (Grey)

40 cm Pole Mount Base (Black)

Housing Color	Base Type	With Cap Option Cat. No.	Without Cap Option Cat. No.
Black	Surface Mount — PG16 Conduit Mount	**855T-BSBC**	**855T-BSB**
	Vertical Mount	**855T-BVMC**	**855T-BVM**
	10 cm Aluminum Pole Mount	**855T-BPM10C**	**855T-BPM10**
	25 cm Aluminum Pole Mount	**855T-BPM25C**	**855T-BPM25**
	40 cm Aluminum Pole Mount	**855T-BPM40C**	**855T-BPM40**

Accessories for 855T

	Description		Cat. No.
	Incandescent Lamps		
	12V AC/DC		855T-L12
	24V AC/DC		**855T-L24**
	120V AC		**855T-L10**
	240V AC		**855T-L20**
	LED Lamps for Socket-Mounted Modules	**Color**	
	24V AC/DC	Red	**855E-LL24R**
		Green	**855E-LL24G**
		Yellow	855E-LL24Y
		Amber	**855E-LL24A**
		Blue	**855E-LL24B**
		White ★	**855E-LL24W**
	240V AC	Red	855E-LL20R
		Green	855E-LL20G
		Yellow	855E-LL20Y
		Amber	855E-LL20A
		Blue	855E-LL20B
		White ★	855E-LL20W
	Caps The cap is installed to the top of the uppermost light module. No cap is needed if the top module is a sound module, or a light/with sound module.		**855T-ABCAP**

★ White LED lamps are to be used with a lens option of Clear only.

Quick Release Base Accessories

	Base Type	Housing Color	Cat. No.
	10 cm Pole, Quick-Release Base / 70 mm Base	Black	855T-BMM10C
	25 cm Pole, Quick-Release Base / 70 mm Base		855T-BMM25C
	10 cm Pole, Quick-Release Base / 50 mm Base	Black	855E-BMM10C
	25 cm Pole, Quick-Release Base / 50 mm Base		855E-BMM25C

Pre-assembled and Pre-wired Tower Lights 70 mm, One to Five Modules

Base Type	Voltage	Level 1		Level 2		Level 3		Level 4	Cat. No.
		Module	Color	Module	Color	Module	Color	Module	
10 cm Aluminum Pole Mount	24V AC/DC	Steady LED	Amber	Steady LED	Red	—	—	—	855F-P10SC20B24Y5Y4
			Green		Amber	Steady LED	Red	—	855F-P10SC20B24Y3Y5Y4
	240V AC		Amber		Red	—	—	—	855F-P10SC20B20Y5Y4
			Green		Amber	Steady LED	Red	—	855F-P10SC20B20Y3Y5Y4
10 cm Threaded Tube Mount	24V AC/DC		Amber		Red	—	—	—	855F-T10SC20B24Y5Y4
			Green		Amber	Steady LED	Red	—	855F-T10SC20B24Y3Y5Y4
	240V AC		Amber		Red	—	—	—	855F-T10SC20B20Y5Y4
			Green		Amber	Steady LED	Red	—	855F-T10SC20B20Y3Y5Y4
10 cm Aluminum Pole Mount	24V AC/DC		Green		Amber	Steady LED	Red	100 dB Dual Circuit Piezo Sound Alarm	855F-P10SC20B24Y3Y5Y4Q1
			Red	100 dB Piezo Sound Alarm, Pulsing Tone	—	—	—	—	855F-P10SC20B24Y4P1

See Publication 855F-PP001… for complete product information.

Industrial Electronic Horns with Attached Strobe Beacons

Multi-circuit, selectable tone horns with strobe beacon light for use in general signaling applications.

Range "A" Horn with Beacon
230V AC 50/60 Hz
Red Strobe Beacon

Range "C" Horn with Beacon
24V DC
Amber Strobe Beacon

Range "E" Horn with Beacon
230V AC 50/60 Hz
Green Strobe Beacon

Base Color	Sound Output	Voltage	Beacon Lens Color	Cat. No.
Grey	100 dB max. at 1 m, 2 circuit DC, 1 circuit AC, 10 selectable tones	24V DC	Green	855H-BCD24ADR3
			Red	**855H-BCD24ADR4**
			Amber	855H-BCD24ADR5
		240V AC, 50/60 Hz	Green	855H-BCA20ADR3
			Red	855H-BCA20ADR4
			Amber	855H-BCA20ADR5
	104 dB max. at 1 m, 3 circuit AC or DC, 32 selectable tones	24V DC	Green	855H-BCD24BDR3
			Red	855H-BCD24BDR4
			Amber	855H-BCD24BDR5
		240V AC, 50/60 Hz	Green	855H-BCA20BDR3
			Red	855H-BCA20BDR4
			Amber	855H-BCA20BDR5
	112 dB max. at 1 m, 3 circuit AC or DC, 32 selectable tones	24V DC	Green	855H-BCD24CDR3
			Red	855H-BCD24CDR4
			Amber	855H-BCD24CDR5
		240V AC, 50/60 Hz	Green	855H-BCA20CDR3
			Red	855H-BCA20CDR4
			Amber	855H-BCA20CDR5
	119 dB max. at 1 m, 3 circuit AC or DC, 45 selectable tones	24V DC	Green	855H-BCD24DDR3
			Red	855H-BCD24DDR4
			Amber	855H-BCD24DDR5
		240V AC, 50/60 Hz	Green	855H-BCA20DDR3
			Red	855H-BCA20DDR4
			Amber	855H-BCA20DDR5
	126 dB max. at 1 m, 3 circuit AC or DC, 45 selectable tones	24V DC	Green	855H-BCD24EDR3
			Red	855H-BCD24EDR4
			Amber	855H-BCD24EDR5
		240V AC, 50/60 Hz	Green	855H-BCA20EDR3
			Red	855H-BCA20EDR4
			Amber	855H-BCA20EDR5

General-Purpose Electronic Horns

Improved performance over electromechanical alternative

- 108 dB(A) maximum
- Three user-selectable tones to better contrast ambient noise
- Stepless volume control via potentiometer to adjust to changing ambient noise
- Lower current consumption at approximately half to one tenth of electromechanical alternative
- Longer life and maintenance-free due to non-moving parts and highly reliable discrete components

Suitable for humid, dirty, and corrosive environments

- Surface mount version rated UL Type 4/4X/13, IP66
- Semi-flush mount version rated UL Type 3R/13, IP54
- UV-stable plastics ideal for outdoors

Mounting Type	Supply Voltage	Cat. No.
Surface base with conduit entrance	24V AC/DC	855H-SG24GPA
	240V AC	855H-SG20GPA
Semi-flush wall plate	24V AC/DC	855H-FG24GPA
	240V AC	855H-FG20GPA

Mini Square Beacons

Mini square 5 Joule strobe beacons for general signaling applications. Bases accept conduit connections in side and back of enclosure.

Base Color	Supply Voltage	Lens Color	Cat. No.
Grey	24V AC/DC	Green	855B-GMS24R3
	240V AC, 50/60 Hz		855B-GMS20R3
	24V AC/DC	Red	**855B-GMS24R4**
	240V AC, 50/60 Hz		855B-GMS20R4
	24V AC/DC	Amber	**855B-GMS24R5**
	240V AC, 50/60 Hz		855B-GMS20R5
	24V AC/DC	Blue	855B-GMS24R6
	240V AC, 50/60 Hz		855B-GMS20R6
	24V AC/DC	Clear	855B-GMS24R7
	240V AC, 50/60 Hz		855B-GMS20R7
	24V AC/DC	Yellow	855B-GMS24R8
	240V AC, 50/60 Hz		855B-GMS20R8

Bulletin 855BS, 855BM, 855BL — Industrial Round Beacons

90 mm Beacons

Base Type	Voltage	Function	Color	Cat. No.
Surface Mount ★	24V AC/DC	Steady Halogen	Red	855BS-S24DH4
			Green	855BS-S24DH3
			Amber	855BS-S24DH5
		Rotating Halogen	Red	855BS-S24RH4
			Green	855BS-S24RH3
			Amber	855BS-S24RH5
		Xenon Strobe	Red	855BS-S24BR4
			Green	855BS-S24BR3
			Amber	855BS-S24BR5

120 mm Beacons

Base Type	Voltage	Function	Lens Color	Cat. No.
Surface Mount ★	24V AC/DC	Steady Halogen	Red	855BM-S24DH4
			Green	855BM-S24DH3
			Amber	855BM-S24DH5
		Rotating Halogen	Red	855BM-S24RH4
			Green	855BM-S24RH3
			Amber	855BM-S24RH5
		Strobe	Red	855BM-S24BR4
			Green	855BM-S24BR3
			Amber	855BM-S24BR5

160 mm Beacons

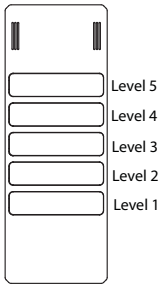
Base Type	Voltage	Function	Lens Color	Cat. No.
Surface Mount ★	24V AC/DC	Steady Halogen	Red	855BL-S24DH4
			Green	855BL-S24DH3
			Amber	855BL-S24DH5
		Rotating Halogen	Red	855BL-S24RH4
			Green	855BL-S24RH3
			Amber	855BL-S24RH5
		Strobe	Red	855BL-S24BR4
			Green	855BL-S24BR3
			Amber	855BL-S24BR5

★ Surface Mount Base must be installed with Rough Wall Plate for UL Type 4/4X/13 rating.

Wall Mount Signal Lights

- UL Type 4/4X/13, IP65
- Configurations from 2…5 light levels, available with or without sound
- Steady and flashing LED light modules, 24V AC/DC, 110/120V AC, and 230/240V AC
- User-selectable, continuous, or pulsing piezo sound modules
- Six light colors to choose from
- Two housing colors (grey, chrome), available to match application needs
- Can be mounted in any orientation

Pre-Assembled Wall Mount Signal Lights, Two to Five Light Levels



855W		–	G	10	Y	7	Y	6	Y	3	Y	5	L	4	P1
	a		*b*	*c*	*d*	*e*	*d*	*e*	*d*	*e*	*d*	*e*	*d*	*e*	*f*
					(Level 1, d+e)		*(Level 2, d+e)*		*(Level 3, d+e)*		*(Level 4, d+e)*		*(Level 5, d+e)*		

a

Network Option	
Code	**Description**
Blank	No network option

b

Housing Color	
Code	**Description**
C	Chrome plated
G	Grey

c

Voltage	
Code	**Description**
24	24V AC/DC
10	120V AC
20	240V AC

d

Module Type	
Code	**Description**
Y	Steady LED
L	Flashing LED

e

Lens Color	
Code	**Description**
3	Green
4	Red
5	Amber
6	Blue
7	Clear
8	Yellow

f

Sound	
Code	**Description**
Blank	No sound
P1	Piezo Sounder (continuous/pulsing)

Housing Color	Voltage	Level 1		Level 2		Level 3		Level 4		Level 5		Cat. No.★
		LED Module	Color	LED Module	Color	LED Module	Color	LED Module	Color	LED Module	Color	
Grey	24V AC/DC	Steady	G		A	Steady	R	—	—	—	—	855W-G24Y3Y5Y4P1
			G		A	Flash	R	—	—	—	—	855W-G24Y3Y5L4P1
			B		A		R	—	—	—	—	855W-G24Y6Y5Y4P1
			C		A		R	—	—	—	—	855W-G24Y7Y5Y4P1
			B	Steady	G	Steady	A	Flash	R	—	—	855W-G24Y6Y3Y5L4P1
			B		G		A	Steady	R	—	—	855W-G24Y6Y3Y5Y4P1
			C		G		A	Flash	R	—	—	855W-G24Y7Y3Y5L4P1
			B		G		A	Steady	C	—	—	855W-G24Y6Y3Y5Y7P1
			G		R	—	—	—	—	—	—	855W-G24Y3Y4P1
			G	Flash	R	—	—	—	—	—	—	855W-G24Y3L4P1
			G		R	—	—	—	—	—	—	855W-G24Y3Y4
			G	Steady	A		R	—	—	—	—	855W-G24Y3Y5Y4
			B		A	Steady	R	—	—	—	—	855W-G24Y6Y5Y4
			B		G		A	Steady	R	—	—	855W-G24Y6Y3Y5Y4
Grey	240V AC	Steady	G		A	Flash	R	—	—	—	—	855W-G20Y3Y5L4P1
			G		A		R	—	—	—	—	855W-G20Y3Y5Y4P1
			B		G		A	Steady	R	—	—	855W-G20Y6Y3Y5Y4P1
			B	Steady	G	Steady	A	Flash	R	—	—	855W-G20Y6Y3Y5L4P1
			C		B		G	Steady	A	Steady	R	855W-G20Y7Y6Y3Y5Y4P1
			C		B		G		A	Flash	R	855W-G20Y7Y6Y3Y5L4P1
			G		R	—	—	—	—	—	—	855W-G20Y3Y4P1
			G	Flash	R	—	—	—	—	—	—	855W-G20Y3L4P1
			G		R	—	—	—	—	—	—	855W-G20Y3Y4
			G	Steady	A		R	—	—	—	—	855W-G20Y3Y5Y4
			B		G	Steady	A	Steady	R	—	—	855W-G20Y6Y3Y5Y4
			C		B		G		A	Steady	R	855W-G20Y7Y6Y3Y5Y4

★ Piezo sound modules are included on cat. nos. that contain the suffix **P1**.

Color Code: G=green, **R**=red, **B**=blue, **C**=clear, **A**=amber, **Y**=yellow

PanelView™ Component Graphic Terminals★

Bulletin	2711C-F2M 2711C-K2M	2711C-T3M 2711C-K3M	2711C-T6M 2711C-T6T	2711C-T10C
Type	**PanelView C200**	**PanelView C300**	**PanelView C600**	**PanelView C1000**
Display				
Display Type	Monochrome: Transflective STN	Monochrome: Transflective FSTN	Monochrome: Transmissive FSTN Color: Transmissive TFT	Color: Transmissive TFT
Display Area (WxH)	49 x 14 mm (1.93 x 0.55 in.)	67 x 33 mm (2.64 x 1.30 in.)	115 x 86 mm (4.53 x 3.39 in.)	211 x 158 mm (8.31 x 6.22 in.)
Display Size	2 in.	3 in.	5.7 in.	10.4 in.
Resolution	122 x 32 pixels	128 x 64 pixels	320 x 240 pixels	640 x 480 pixels
Operator Input	4 function key or combination function/numeric key	Analogue touch or combination function/numeric key	Analogue touch	Analogue touch
Electrical				
Communication Port	RS232 (9 pin D-Shell), RS422/RS485 (Connector)		RS232 (9 pin D-Shell), RS422/RS485 (Connector) Ethernet Port	
Memory Card	USB port	USB port	USB port or secure digital card	USB port or secure digital card
Programming Port	USB device port			
Real Time Clock	Software clock without battery backup	Software clock without battery backup	Battery-backed	Battery-backed
Power Consumption	5 W max. (0.21 A at 24V DC)	5 W max. (0.21 A at 24V DC)	10 W max. (0.42 A at 24V DC)	18 W (0.75 A at 24V DC)
Power Requirements	18…30V DC (24V DC nom.)			
Environmental				
Operating Temperature	0…50 °C (32…122 °F)			
Enclosure	NEMA/UL Type 4X (Indoor), 12, 13, and IEC IP54, IP65			
Certifications	cULus, CE Marked, C-Tick			
Mechanical				
Weight Keypad or Keypad/Touch	0.2 kg 0.3 kg	0.2 kg 0.3 kg	0.7 kg	1.6 kg
Dimensions Overall (H x W x D)	80 x 116 x 54 mm (3.15 x 4.54 x 2.13 in.) 119 x 139 x 55 mm (4.69 x 5.47 x 2.15 in.)	80 x 116 x 57 mm (3.15 x 4.54 x 2.23 in.) 119 x 139 x 55 mm (4.69 x 5.47 x 2.15 in.)	154 x 209 x 57 mm (6.0 x 8.23 x 2.25 in.)	250 x 308 x 54 mm (9.84 x 12.13 x 2.13 in.)
Dimensions, Cutout (HxW)	65 x 100 mm (2.56 x 3.94 in.) 100 x 120 mm (3.94 x 4.72 in.)	65 x 100 mm (2.56 x 3.94 in.) 100 x 120 mm (3.94 x 4.72 in.)	136 x 190 mm (5.35 x 7.48 in.)	232 x 290 mm (9.13 x 11.42 in.)
Product Selection	**Page 3-47**			

★ For large and/or color display options, visit: http://www.ab.com/eoi/graphicterminals/panelviewcomponent.html

PanelView Component C200...C1000 Terminals

- Optimized for communication with MicroLogix or SLC 500 controllers: DF1, DH-485, Ethernet to MicroLogix or SLC 500 controller, and multi-vendor communications
- Display information in several languages including Russian, Greek, Chinese, Japanese and Korean
- Alert operators with alarm messages that include variables
- Upload and download groups of data or parameter settings with recipe feature
- Secure information on screens with user name and password protection

Software

- Design software is on the PanelView Component operator interface so there's no need to install software on the PC
- PC-based software is also available

Communication

PanelView Component terminals offer standard communication options - RS232, RS485, as well as many vendor communication options including Modbus and Modbus/TCP. The PanelView Component 6-inch and 10-inch terminals have Ethernet as additional communication option.

PanelView Component Terminals

Terminals	Description	Cat. No.
C200	PanelView C200, 2-inch monochrome STN display with four function keys, serial communications, 24V DC power	**2711C-F2M**
	PanelView C200, 2-inch monochrome STN display with ten function keys and numeric keypad, serial communications, 24V DC power	2711C-K2M
C300	PanelView C300, 3-inch monochrome FSTN display with touch screen, serial communications, 24V DC power	**2711C-T3M**
	PanelView C300, 3-inch monochrome FSTN display with ten function keys and numeric keypad, serial communications, 24V DC power	**2711C-K3M**
C600	PanelView C600, 6-inch monochrome FSTN display with touch screen, serial and Ethernet communication, 24V DC power	**2711C-T6M**
	PanelView C600, 6-inch color TFT display with touch screen, serial and Ethernet communication, 24V DC power	**2711C-T6T**
C1000	PanelView C1000, 10-inch color TFT display with touch screen, serial and Ethernet communication, 24V DC power	**2711C-T10C**

Accessories for PanelView Component C200 - C1000

Description	Cat. No.
USB host to USB device programming cable for PanelView Component terminals, 2 m (6.5 ft)	**2711C-CBL-UU02**
SLC 5/03, SLC 5/04, and SLC 5/05 RS-232 programmer cable	**1747-CP3**
RS-232 operating/programming cable, 8-Pin Mini DIN to 9-Pin D Shell (MicroLogix), 2 m (6.5 ft)	**1761-CBL-PM02**
Ethernet CAT5 crossover industrial cable, 4.3 m (14 ft)	2711P-CBL-EX04
USB secure digital 128 MB memory card for PanelView component devices	2711C-RCSD
Protective antiglare overlay for PanelView C200 function key and C300 touch-screen terminals (Quantity 3)	2711C-RG2F
Protective antiglare overlay for PanelView C200 and C300 keypad terminals (Quantity 3)	2711C-RG2K
Protective antiglare overlay for PanelView C600 touch-screen terminals (Quantity 3)	2711C-RG6T
Protective antiglare overlay for PanelView C1000 terminals (Quantity 3)	2711C-RG10T
RS422/485 connector with resistor (Quantity 10)	2711C-RJ422

Connectivity

TABLE OF CONTENTS

Signal Conditioners	4-2
Terminal Blocks	4-4
Wiring Systems	4-13
ArmorConnect Power Media	4-14
DeviceNet Media	4-16
Ethernet Media	4-28
Distributed I/O	4-32
Connection Systems	4-35

Bulletin 931 Analog Signal Conditioners

Our analog signal conditioners are designed to isolate, transmit, convert and amplify analog signals in batch or continuous process applications. They are compatible with all types of integrated PLC and DCS I/O systems. You can integrate them with our PlantPAx™ Process Automation System to leverage a single control platform for batch, drives, motion control, process and safety.

Standard

High-Density

Universal

- Isolation of analog measurement and control signals with 2 way isolation (between input and output) or 3 way isolation (between input, output and power).
- Conversion of analog signals from voltage to current. (i.e. 0...10V to 4...20 mA, etc.)
- Amplification, linearization, and transmission of low level sensor signals (i.e., mV signals from thermocouples, etc.).
- Transmission of analog signals over long distances
- Provides local display using a splitter or remote status indications and alarms via relay contact closures based on the analog signals.

Bulletin 931H - High-Density Series

The modules in the High-Density series provide cost-effective analog signal conditioning in a very small package.

Bulletin 931S - Standard Series

The Bulletin 931S Standard Series of analog signal conditioners provide solutions for a wide variety of analog signals. They are available in compact sizes ranging from 12.5... 22.5 mm in width.

Bulletin 931U- Universal Series

The Bulletin 931U Universal Series of analog signal conditioners are programmable, allowing the devices to be used on a wide variety of analog signals. Two models are available, one in a 12.5mm wide housing and one in a 45mm wide housing. Both are programmable using the same software.

For detailed information on Signal Conditioners, please visit our website: www.ab.com/catalogs

Catalog Number Explanation

931 –	S	A1	A1	N	-	IP	N
	a	*b*	*c*	*d*	*-*	*e*	*f*

a

Code	Type
H	High-Density
S	Standard
U	Universal

b

Code	Input Type
Current	
A1	0…20 mA or 4…20 mA
A2	4…20 mA
A3	0…1 A, 0…5 A or 0…10 A AC
A4	0…20 A, 0…25 A or 0…30 A AC/DC
Bridge	
B1	-500 mV…+500 mV
Voltage or Current	
C1	0…5V or 0…1 V DC
	0…20 mA or 4…20 mA
C2	0…10V DC
	0…20 mA or 4...20mA
C3	0…10 V DC
	0…22mA
C4	±20mV...±200V
	±0.1mA…100mA
C9	Universal Inputs
Frequency	
F1	2-,3-wire PNP/NPN, namar initiator, push/pull step
Potentiometer	
P1	PT 100/2/3/4-Conductor or Ni 100/2/3/4-Conductor
P2	PT 100/2/3-Conductor
P3	PT 100/2/3/4-Conductor
Thermocouple	
T1	Type J
T2	Type K
T9	Types K,J,T,E,N,R,S,B
Voltage	
V1	24…70 V, 70…140 V, 140…210 V or 210…260 V AC/DC

c

Code	Output Type
Current	
A1	0…20 mA or 4…20 mA
A2	4…20 mA
A5	(2) 4…20 mA
Voltage or Current	
C1	0…5V or 0…1 V DC
	0…20 mA or 4…20 mA
C2	0…10V DC
	0…20 mA or 4...20mA
C3	0…10 V DC
	0…22mA
C5	0...±10V
	0…±20 mA
C6	0…5V, 5…0V DC or 10…0V, 0…10V DC
	0…20 mA, 20…0 mA or 4…20 mA, 20…4 mA
C7	0…±10V
	0...±20 mA
R1	3 A relay contact closure digital output

d

Code	Configuration Setting
N	Non-configurable
D	Dip Switch
J	Jumper
C	Computer

e

Code	Power Type
IP	Input Loop Power
OP	Output Loop Power
BC	Aux AC or DC Power
DC	DC Aux Power
MC	from the Measuring Circuit

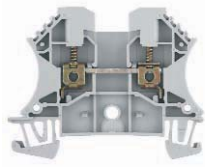
f

Code	Miscellaneous
1	One Channel
2	Two Channels
Hall	Hall Effect Sensor
Hart	Hart Communication Protocol
Cable	Cable
1R	One Relay
2R	Two Relays

Terminal Blocks

Product Line Overview

Terminal Blocks Selection

		
Bulletin	**1492-J**	**1492-L**
Type	**Screw Type Terminal Blocks**	**Spring-Clamp Terminal Blocks**
Features	• Mini terminal blocks for 15 mm DIN rail • Terminals for 35 mm DIN rail • Two level terminal blocks — with diode — in forward bias or in reverse bias — with selectable resistor — with MOV • Two pole thermocouple blocks	• Terminals for 35 mm DIN rail • Single circuit terminal blocks available in 8 colours • Component blocks — with a diode — in forward bias or in reverse bias — Resistor selectable — with MOV
Approvals	UR, CSA, IEC	
Accessories	Test Plugs/Test Plug Adapters, End Anchors, End Barriers, Partition Plates, Side Jumpers, Centre Jumper Bars, Centre Jumper Covers, Neutral Connecting Blocks, Commoning Bus Bars, Warning Plates, Group Marking Carriers	End Retainers/Group Marking Carriers, Terminal Covers, Centre Jumpers, Centre Jumper Links, QuickClamp Insulation Stops, Marker Card Adapters
Product Selection	**See page 4-5**	**See page 4-8**

Power Distribution Block Selection

Bulletin	**1492-PDE**
Features	• Can be mechanically connected for multiple pole requirements • Panel-mounting • IP2X Finger-safe from front
Current Range	175…510 A
Number of Poles	1-pole
Distribution Block Wiring	1, 2, 4, and 8 wires per pole
Max. Voltage Ratings	600V AC/DC
Insulation Material Max. Temp.	125 °C (257 °F)
Power Block Material	Aluminum or Copper
Wire Size	400 kcmil... #16 AWG per phase Cu
Certifications	CE Compliant, CSA Certified and UL Recognized
Product Selection	**Page 4-12**

Screw Type Terminal Blocks

Feed-Through Terminal Blocks 2.5…4 mm²

Type		2.5 mm²		4 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Block	Grey	100	**1492-J3**	100	**1492-J4**
	Colour	100	1492-J3-★	100	1492-J4-★
Accessories					
Marking Systems: Marker card		5	**1492-M5X12** (144/card)	5	**1492-M6X12** (120/card)
End barrier	Grey	50	**1492-EBJ3**	50	**1492-EBJ3**
Screw centre jumper (10 pole)		20	**1492-CJJ5-10**	20	**1492-CJJ6-10**
Screw centre jumper (2 pole)		50	**1492-CJJ5-2**	50	**1492-CJJ6-2**
Partition Plates		20	**1492-EBJ16**	20	**1492-EBJ16**

Feed-Through Terminal Blocks 6…10 mm²

Type		6 mm²		10 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Block	Grey	100	**1492-J6**	50	**1492-J10**
	Colour	100	1492-J6-★	50	1492-J10-★
Accessories					
Marking Systems: Marker card		5	**1492-M7X12** (108/card)	5	**1492-M7X12** (108/card)
End barrier	Grey	50	**1492-EBJ3**	50	**1492-EBJ3**
Screw centre jumper (10 pole)		20	1492-CJJ8-10	20	1492-CJJ10-10
Screw centre jumper (2 pole)		50	1492-CJJ8-2	50	1492-CJJ10-2
Partition Plates		20	**1492-EBJ16**	20	**1492-EBJ16**

Feed-Through Terminal Blocks 16…35 mm²

Type		16 mm²		35 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Block	Grey	50	**1492-J16**	40	**1492-J35**
	Colour	50	1492-J16-★	40	1492-J35-★
Accessories					
Marking Systems: Marker card		5	**1492-M7X12** (108/card)	5	**1492-M7X12** (108/card)
End barrier	Grey	20	**1492-EBJ16**	20	**1492-EBJ16**
Screw centre jumper (10 pole)		10	1492-CJJ12-10	10	1492-CJJ16-10
Screw centre jumper (2 pole)		20	1492-CJJ12-2	20	1492-CJJ16-2
Partition Plates		20	**1492-PPJD3**	20	**1492-PPJD3**

★ For colored blocks, add suffix **RE** = Red, **B** = Blue, **BL** = Black, **G** = Green, **Y** = Yellow, **OR** = Orange, **BR** = Brown, **W** = White to the end of the catalog number.

PQ = Package Quantity

Screw Type Terminal Blocks

Feed-Through Terminal Blocks 50…70 mm²

Type		50 mm²		70 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Block	Grey	10	**1492-J50**	10	**1492-J70**
	Blue	10	1492-J50-B	10	**1492-J70-B**
Accessories					
Marking Systems: Marker card		5	**1492-M7X12** (108/card)	5	**1492-M7X12** (108/card)
End barrier		—	Not Required	—	Not Required
End Anchor					
DIN Rail — Heavy Duty		50	**1492-EAHJ35**	50	**1492-EAHJ35**
Jumpers					
Screw centre jumper (4 pole)		10	1492-CJJ18-4	5	1492-CJJ20-4
Screw centre jumper (3 pole)		10	1492-CJJ18-3	5	1492-CJJ20-3
Screw centre jumper (2 pole)		10	1492-CJJ18-2	5	1492-CJJ20-2

PQ = Package Quantity

Feed-Through Terminal Blocks 120…240 mm²

Type		120 mm²		240 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Block	Grey	5	1492-J120	—	—
	Beige	—	—	2	1492-J240
Accessories					
Marking Systems: Marker card		5	1492-M8X12 (84/card)	5	1492-M8X12 (84/card)
End barrier		—	Not Required	—	Not Required
End Anchor					
DIN Rail — Heavy Duty		50	**1492-EAHJ35**	50	**1492-EAHJ35**
Jumpers					
Screw centre jumper (4 pole)		5	1492-CJJ27-4	—	—
Screw centre jumper (3 pole)		5	1492-CJJ27-3	—	—
Screw centre jumper (2 pole)		5	1492-CJJ27-2	—	—
Side jumper (3 pole)		—	—	5	1492-SJ36-3
Side jumper (2 pole)		—	—	5	1492-SJ36-2

PQ = Package Quantity

See Publication A117 for complete product information.

Screw Type Terminal Blocks

1492-JG...

1492-JD...

1492-WFB4

Feed-Through Ground Blocks 4...10 mm²

Type		4 mm²		6 mm²		10 mm²	
		PQ	Cat. No.	PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Green/Yellow	100	**1492-JG4**	50	**1492-JG6**	50	**1492-JG10**
Accessories							
Marking Systems: Marker card		5	**1492-M6X12** (120/card)	5	**1492-M7X12** (108/card)	5	**1492-M7X12** (108/card)
End Anchors							
DIN Rail - Normal Duty		100	**1492-EAJ35**	100	**1492-EAJ35**	100	**1492-EAJ35**
DIN Rail - Heavy Duty		50	**1492-EAHJ35**	50	**1492-EAHJ35**	50	**1492-EAHJ35**

Feed-Through Ground Blocks 16...35 mm²

Type		16 mm²		35 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Green/Yellow	50	**1492-JG16**	25	**1492-JG35**
Accessories					
Marking Systems: Marker card		5	**1492-M7X12** (108/card)	5	**1492-M7X12** (108/card)
End Anchors					
DIN Rail - Heavy Duty		50	**1492-EAHJ35**	50	**1492-EAHJ35**

Multi-Circuit Feed-Through Blocks

Type		2.5 mm²		4 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Grey	100	**1492-JD3**	100	**1492-JD4**
	Colour	100	1492-JD3-★	100	1492-JD4-★
Accessories					
End Barrier	Grey	20	**1492-EBJD3**	20	1492-EBJD4
Screw center jumper (10-pole)		20	**1492-CJJ5-10**	20	**1492-CJLJ6-10**
Screw center jumper (2-pole)		50	**1492-CJJ5-2**	60	1492-CJLJ6-2
Partition Plate		20	**1492-PPJD3**	20	**1492-PPJD3**
Marking Systems: Snap-in Marker Cards		5	1492-MR5X8 (120/card)	5	1492-MR6X8 (120/card)

★ For colored blocks, add suffix **RE** = Red, **B** = Blue, **BL** = Black, **G** = Green, **Y** = Yellow, **OR** = Orange, **BR** = Brown, **W** = White to the end of the catalog number.

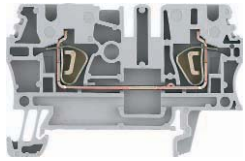
Fuse Blocks

Type	4 mm²	
Terminal Block	PQ	Cat. No.
Black-No Indication	50	**1492-WFB4**

PQ = Package Quantity

CONNECTIVITY

Spring-Clamp Terminal Blocks



Feed-Through Terminal Blocks 2.5…6 mm²

Type		2.5 mm²		4 mm²		6 mm²	
		PQ	Cat. No.	PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Grey	100	**1492-L3**	50	**1492-L4**	50	**1492-L6**
	Colour	100	1492-L3-★	50	1492-L4-★	50	1492-L6-★
Accessories							
End barrier	Grey	50	**1492-EBL3**	50	**1492-EBL3**	50	**1492-EBL6**
Centre jumper with Plug (10 pole)		20	**1492-CJK5-10**	20	**1492-CJK6-10**	60	1492-CJL8-2
Centre jumper with Plug (2 pole)		60	**1492-CJK5-2**	60	1492-CJK6-2	5	**1492-M6X12** (120/card)
Reducing Sleeves 0.25…0.5 mm²		100	1492-PSL3-5	100	1492-PSL4-5	—	—
(#22…#20 AWG)	Grey					—	—
Marking Systems: Marker card		5	**1492-M5X10** (144/card)	5	**1492-M6X10** (120/card)	—	—

Feed-Through Terminal Blocks 10…16 mm²

Type		10 mm²		16 mm²	
		PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Grey	25	**1492-L10**	25	**1492-L16**
	Colour	25	1492-L10-★	25	1492-L16-★
Accessories					
End barrier	Grey	20	**1492-EBL10**	20	**1492-EBL16**
Centre jumper with Plug (2 pole)		25	1492-CJL10-2	5	**1492-M7X12** (108/card)
Marking Systems: Marker card		5	**1492-M6X12** (120/card)	—	—

★ For colored blocks, add suffix **RE** = Red, **B** = Blue, **BL** = Black, **G** = Green, **Y** = Yellow, **OR** = Orange, **BR** = Brown, **W** = White to the end of the catalog number.

Feed-Through Ground Blocks 2.5…6 mm²

Type		2.5 mm²		4 mm²		6 mm²	
		PQ	Cat. No.	PQ	Cat. No.	PQ	Cat. No.
Terminal Blocks	Green/Yellow	100	**1492-LG3**	50	**1492-LG4**	50	**1492-LG6**
Accessories							
End barrier	Yellow	50	1492-EBL3-Y	50	1492-EBL4-Y	50	1492-EBL6-Y
Reducing Sleeves 0.25…0.5 mm²		100	1492-PSL3-5	100	1492-PSL4-5	5	**1492-M6X12** (120/card)
(#22…#20 AWG)	Grey					—	—
Marking Systems: Marker card		5	**1492-M5X10** (144/card)	5	**1492-M5X10** (144/card)	—	—

PQ = Package Quantity

For Feed-Through Ground Blocks 10 mm² and 16 mm². see Publication A117.

Multiple Contact Point Feed-Through Blocks

Type		2.5 mm² PQ	2.5 mm² Cat. No.	2.5 mm² PQ	2.5 mm² Cat. No.
Terminal Blocks	Grey	100	**1492-L3T**	100	**1492-L3Q**
	Colour	100	1492-L3T-★	100	1492-L3Q-★
Accessories					
Marking Systems: Snap-in Marker Cards		5	**1492-M5X10** (144/card)	5	**1492-M5X10** (144/card)
End Barriers	Grey	50	**1492-EBL3T**	50	**1492-EBL3Q**
End Anchors					
DIN Rail — Normal Duty		100	**1492-EAJ35**	100	**1492-EAJ35**
DIN Rail — Heavy Duty		50	**1492-EAHJ35**	50	**1492-EAHJ35**
Jumpers					
Plug-in Center Jumper — 4-Pole		60	**1492-CJK5-4**	60	**1492-CJK5-4**
Plug-in Center Jumper — 3-Pole		60	**1492-CJK5-3**	60	**1492-CJK5-3**
Plug-in Center Jumper — 2-Pole		60	**1492-CJK5-2**	60	**1492-CJK5-2**

Grounding Block with 2 points on one side

Type		2.5 mm² PQ	2.5 mm² Cat. No.
Terminal Blocks	Green/Yellow	50	**1492-LG3T**
Accessories			
Marking Systems: Snap-In Marker Cards		5	**1492-M5X10** (144/card)
End Barrier	Yellow	50	1492-EBL3T-Y
End Anchors			
DIN Rail — Normal Duty		100	**1492-EAJ35**
DIN Rail — Heavy Duty		50	**1492-EAHJ35**

Multi-Circuit Feed-Through Blocks

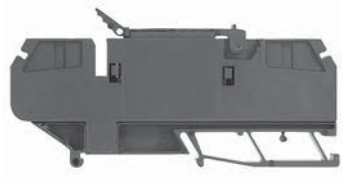
Type		2.5 mm² PQ	2.5 mm² Cat. No.
Terminal Blocks	Grey	25	**1492-LD3**
	Colour	25	1492-LD3-★
Accessories			
Marking Systems: Marker Card		5	**1492-M5X10** (144/card)
End Barrier		20	**1492-EBLD3**
Plug-in Centre Jumper (10-Pole)		20	**1492-CJK5-10**
Plug-in Centre Jumper (2-Pole)		60	**1492-CJK5-2**

★ For coloured blocks, add suffix **RE** = Red, **B** = Blue, **BL** = Black, **G** = Green, **Y** = Yellow, **OR** = Orange, **BR** = Brown, **W** = White to the end of the catalogue number.

PQ = Package Quantity

CONNECTIVITY

Spring-Clamp Terminal Blocks



Single Circuit Fuse Terminal Block 4 mm²

Type		4 mm² PQ	4 mm² Cat. No.
Blown Fuse Indication	Black with 10…57V LED	25	**1492-RFB424**
	Black with 85…264V Glow Lamp	25	1492-RFB4250
Accessories			
Spring clamp-End Anchor		20	**1492-ERL35**
Marking Systems: Marker card		5	**1492-MS6X9** (80/card)

See Publication 1492-SG008… for complete product information.

Marker cards for 1492-J, 1492-L

	For Type	Labels per Card	Color	PQ	Cat. No.
	1492-J, -L	144	White	5	**1492-M5X10**
					1492-M5X12
	1492-J, -L	120	White		**1492-M6X10**
					1492-M6X12
	1492-J, -L	108	White		**1492-M7X12**

PQ = Package Quantity

1492 Pre-Printed Markers

1492 – M5X10 (a) H (b) 1-100 (c)

a

For Use With		Marker Selection	
		Code	Description
1492-L		M3X5	3x5 mm (100 markers/card)
		M3X12	3x12 mm (120 markers/card)
1492-J, L		M5X5	5x5 mm (200 markers/card)
		M5X8	5x8 mm (144 markers/card)
		M5X10	5x10 mm (144 markers/card)
		M5X12	5x12 mm (144 markers/card)
		M5X15	5x15 mm (96 markers/card)
		M6X5	6x5 mm (200 markers/card)
		M6X10	6x10 mm (120 markers/card)
		M6X12	6x12 mm (120 markers/card)
		M7X12	7x12 mm (108 markers/card)
		M8X5	8x5 mm (160 markers/card)
Inter-Linked Markers for	53	MR5X12	5x12 mm (120 markers/card)
	54	MR6X12	6x12 mm (120 markers/card)
	56	MR8X12	8x12 mm (84 markers/card)
1492-K		SM5X10	5x10 mm (144 markers/card)
		SM6X10	6x10 mm (120 markers/card)
1492-L		MH5X10	5x10 mm (96 markers/card)
		MH5X15	5x15 mm (96 markers/card)
		MH6X12	6x12 mm (80 markers/card)
(NEMA)		MN81	6x10 mm (120 markers/card)
		MN83	10x10 mm (40 markers/card)
1492-W		MS5X5	5x5 mm (80 markers/card)
		MS5X9	5x9 mm (80 markers/card)
		MS5X12	5x12 mm (80 markers/card)
1492-W, R		MS6X9	6x9 mm (80 markers/card)
1492-W		MS6X12	6x12 mm (80 markers/card)
1492-W. R. H		MS8X9	8x9 mm (56 markers/card)
		MS8X12	8x12 mm (56 markers/card)
1492-W		MS9X20	9x20 mm (40 markers/card)
700-HN Sockets		MS8X17	8x17 mm (40 markers/card)
		MS10X17	10x17 mm (40 markers/card)
Competitive Terminal Blocks		MC5X8	5x8 mm (120 markers/card)
		MC5X10	5x10 mm (120 markers/card)
		MC5X12	5x12 mm (120 markers/card)
		MC6X10	6x10 mm (120 markers/card)
Wire Markers		MWC1-12	#20…#18 AWG/1.5…2.5 mm² (40 markers/card)
		MWC3-12	#18…#14 AWG/2.0…3.5 mm² (40 markers/card)
		MWC4-12	#12 AWG/2.5…5.0 mm² (24 markers/card)

b

Text Direction	
Code	Description
H	Horizontal Print
V	Vertical Prin
HU	Horizontal Up-side-down Print
VU	Vertical Up-side-down Print

c

Printing Selection	
Straight Fill Printing	
Option 1-End will start at 1 and continue printing sequential numbers until the end of the card is reached.	
Code	Description
1-End	Sequential printing to end of card
Repeat Sequence Printing	
All Options in this section will print the defined sequence in a repeating fashion until all tags are filled. (Example - Option 1-100 with a marker selection of M5x10 will print 1-100 and 1-44.)★	
Code	Description
1-10, or 11-20, or 21-30, … or 491-500	
1-20, or 21-40, or- 41-60, … or 481-500	Block of 20 sequential numbering. Blocks of 20 within a range from 1-500
1-50, or 51-100, or 101-150, … or 451-500	Block of 50 sequential numbering. Blocks of 50 within a range from 1-500
1-100, 101-200, … or 401-500	Block of 100 sequential numbering. Blocks of 100 within a range from 1-500
Single Sequence Printing	
All options in this section will print the defined sequence 1 time only and will leave the rest ofthe marker tags blank. (Example - Option 1-100S with a marker selection of M5x10 will print1-100 and leave 44 blank markers).★	
Code	Description
1-10S, or 11-20S, or 21-30S, … or 491-500	Block of 10 sequential numbering. Blocks of 10 within a range from 1-500
1-20S, or 21-40S, … or 481-500S	Block of 20 sequential numbering. Blocks of 20 within a range from 1-500
1-50S, or 51-100S, … or-451-500S	Block of 50 sequential numbering. Blocks of 50 within a range from 1-500
1-100S, or 101-200S, … or- 401-500S	Block of 100 sequential numbering. Blocks of 100 within a range from 1-500

★ You may not select a printing sequence quantity that exceeds the number of markers per card (e.g., you cannot choose option 1-100 on marker MH5x15 because that card only has 96 markers).

CONNECTIVITY

IEC Marking System

- Plotter for low volume marking demand, x-y plotter with ink pen
- Printer for high volume marking demand, fast, high quality ink yet print

	Description	Cat. No.
	Plotter Kit Includes Series E Plotter, 1492-PLOTPEN25 ink pen, 1492-PLOTPLT plate, communication cables, user manuals, ABPLOT software, and power adaptor.	1492-PLTKIT
	ClearMark Printer, 220V Includes ClearMark Printer, ClearTools Software and first set of ink.	1492-PRINT220

Product Selection

Bulletin 1492-PDE — Enclosed Power Blocks

- IP2X from the front
- Single-pole blocks w/ aluminum or copper connectors
- May be mechanically connected for multiple pole requirements
- Panel-mounting

Amps (Cu Wire) 75 °C	No. of Poles	Line			Load			Cat. No.‡
		Connector Configuration	Wire Range★	Openings per Pole	Connector Configuration	Wire Range★	Openings per Pole	
175	1		2/0…#14 AWG (70…2.5 mm²)	1		2/0…#14 AWG (70…2.5 mm²)	1	1492-PDE1111 1492-PDE1C111
175	1		2/0…#14 AWG (70…2.5 mm²)	1		#2…14 AWG (35…2.5 mm²)	4	1492-PDE1141 1492-PDE1C141
510	1		250 kcmil…#6 AWG (120…16 mm²)	2		250 kcmil…#6 AWG (120…16 mm²)	2	1492-PDE1225 1492-PDE1C225
335	1		400 kcmil…#6 AWG (185…16 mm²) 2/0…#14 AWG (70…2.5 mm²)	1		#2…14 AWG (35…2.5 mm²)	8	1492-PDE1183 1492-PDE1C183

★ Allen-Bradley power distribution blocks are rated for use with flexible wire. Please see www.ab.com for more information.

‡ The C in the catalog number designates copper terminals. Catalog numbers without the C, have aluminum connectors

Wiring System Selection Bulletin 1492

For Bulletin	1762 / MicroLogix 1200	1764 / MicroLogix 1500	1769 / Compact I/O
Features	• Reduced wiring time • Reduced wiring errors • Faster troubleshooting and easier maintenance • Reduced wire preparation and routing • Increased DIN Rail density • Fewer parts, less inventory and lower carrying cost • Design flexibility		
Description	Connecting to Allen-Bradley PLC I/O modules is convenient with Allen-Bradley 1492 Wiring System Interface Modules and Cables. Unlike terminal blocks, they connect through pre-wired cables to digital and analog I/O for Compact I/O for CompactLogix and MicroLogix. The interface modules are mounted onto a standard DIN #3 Rail. Pre-printed adhesive label cards containing field-wiring information are included for each interface module and I/O module combination. Wiring systems are available for many digital and analog I/O modules.		

For complete product information, please see catalogue A117 or our on-line selection tools at www.ab.com

ArmorConnect™ Power Media

Product Line Overview

Three-Phase Power Media for ArmorStart

	Three-Phase Power Trunk Cable	**Three-Phase Power Drop Cable**	**Three-Phase Power Tees and Reducers**	**Three-Phase Power Receptacles**	**Three-Phase Power Accessories**
Description	• Cordset - cable with integral female or male connector on one end • PatchCord - cable with integral female or male connector on each end	• Cordset - cable with integral female or male connector on one end • PatchCord - cable with integral female or male connector on each end	• Tee - connects to a single drop line to trunk with quick change connectors • Reducing Tee - connects to a single drop line (mini) to trunk (cuick change) connector • Reducer - connects from quick change male connector to mini female connector	• Female receptacles are a panel mount connector with flying leads • Male receptacles are a motor juction box mounted connector with flying leads	• Sealing Caps offered in versions to interface with female or male connectors • Locking Clips clamshell design clips over three power phase connector to limit customer access
Features	• Rated for motor branch circuits • Straight or right angle connectors • 4-pin connector type • Cable rating: TC-ER/STOOW • Multiple standard lengths	• Rated for motor branch circuits • Straight or right angle connectors • 4-pin connector type • Cable rating: TC-ER/STOOW • Multiple standard lengths	• Rated for motor branch circuits • Trunk Tee, Reducing Tee and Reducer • 4-pin connector type	• Rated for motor branch circuits • Male and female configurations • 4-pin connector type • 1/2 in. NPT • Available in 1 meter length	• Sealing Caps - available in quick change and mini styles • Locking Clips are design for the quick change and mini style connectors
Rated Voltage	600V	600V	600V	600V	—
Connector Body Dimensions	Straight: 88.9 x 38.6 mm Right Angle: 75.5 x 74 mm	Straight: 56. x 25.4 mm Right Angle: 44.9 x 40.4 mm	Trunk Tee: 108 x 73.6 mm Reducing Tee: 108 x 65.5 mm Reducer: 112.5 x 38.1 mm	*M22 Female:* *33.45 x 25.45 mm* *M22 Male:* *28.04 x 25.45 mm* *M35 Female:* *71.12 x 38.10 mm* *M35 Male:* *63.50 x 38.10 mm*	—

For complete product information, please see catalogue A117 or our on-line selection tools at www.ab.com

Control Power Media

	Control Power Cordsets & Patchcords	**Control Power T-ports**	**Control Power Receptacles**	**Control Power Shorting Plugs**	**Control Power Accessories**
Description	Cable with integral connector on either one or both ends	Cable with single male connector attached to two female connectors	Panel mount connector with flying leads	Integral connector with leads shorted for specific application requirements	Sealing caps, mounting nuts, and sealing washers
Features	• 6-pin/5-used configuration • Male and female • Straight or right angle versions • 16 AWG conductors, cable dual rated UL TC/Open Wiring and STOOW • Multiple standard lengths	• 6-pin/5-used configuration • Compact design • Color-coded E-stop in and E-stop out configurations	• 6-pin/5-used configuration • Male and female • 16 AWG conductors • 1/2 NPT mounting threads • Multiple standard lengths	• 6-pin/5-used configuration • Male • Multiple versions color coded for simple identification	• Rugged durable construction • Designed to mate with Control Power media
Rated Voltage	600V	600V	600V	600V	—
Connector Body Dimensions	Straight: 56 x 25 mm Right Angle: 40 x 45 mm	72 x 64 mm	30 x 25 mm	56 x 25 mm	—

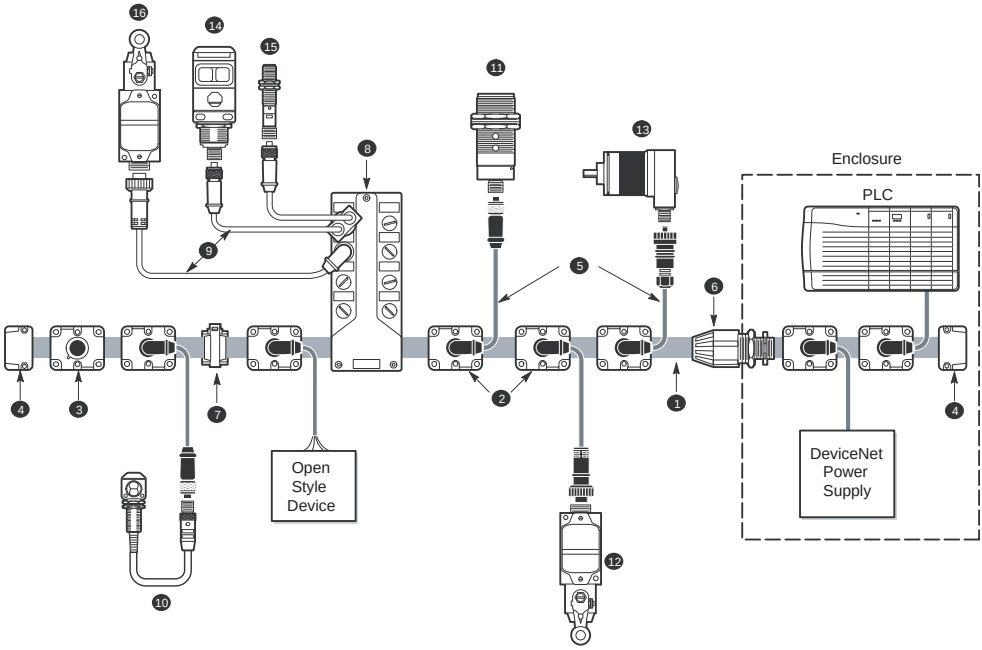
For complete product information, please see catalogue A117 or our on-line selection tools at www.ab.com

DeviceNet Media

Bulletin	1485			
Type	DeviceNet Flat Media System—KwikLink General Purpose	DeviceNet Flat Media System—KwikLink Heavy Duty	DeviceNet Round Media Thick Trunk System	DeviceNet Round Media Thin Trunk System
Product Selection	**this page**	**Page 4-18**	**Page 4-21**	**Page 4-22**

DeviceNet Flat Media System — KwikLink General Purpose

Typical Configuration



1. KwikLink General Purpose Flat Trunk Cable
2. KwikLink General Purpose Connector
3. Micro Terminator
4. Flat Cable End Cap
5. KwikLink Drop Cable
6. Conduit Adaptor
7. Mounting Clamp
8. ArmorBlock I/O
9. Standard Cordsets
10. DeviceNet Photoelectric
11. DeviceNet Inductive
12. DeviceNet Limit Switch
13. DeviceNet Encoder
14. Standard Photoelectric
15. Standard Proximity
16. Standard Limit Switch

See Publication M117-CA001… for complete product information

DeviceNet Flat Media System — KwikLink General Purpose, continued

KwikLink General Purpose Connector

	Description		Cat. No.
	KwikLink General Purpose Connector	Micro Style	**1485P-K1E4-R5**

KwikLink General Purpose Flat Cable Trunk

(Only for use with KwikLink General Purpose connector 1485P-K1E4-R5)

	Description	Spool	Rating	Used	Color	Cat. No.
	DeviceNet KwikLinkCL2 Trunk Cable	75 m	24V DC, 4 A (Class 2)	Device Net Trunk	Grey (PVC)	1485C-P1K75
		200 m				1485C-P1K200
		420 m				1485C-P1K420

Note: KwikLink General Purpose Flat Cables are not recommended for use with original Heavy Duty KwikLink connectors.

KwikLink Accessories

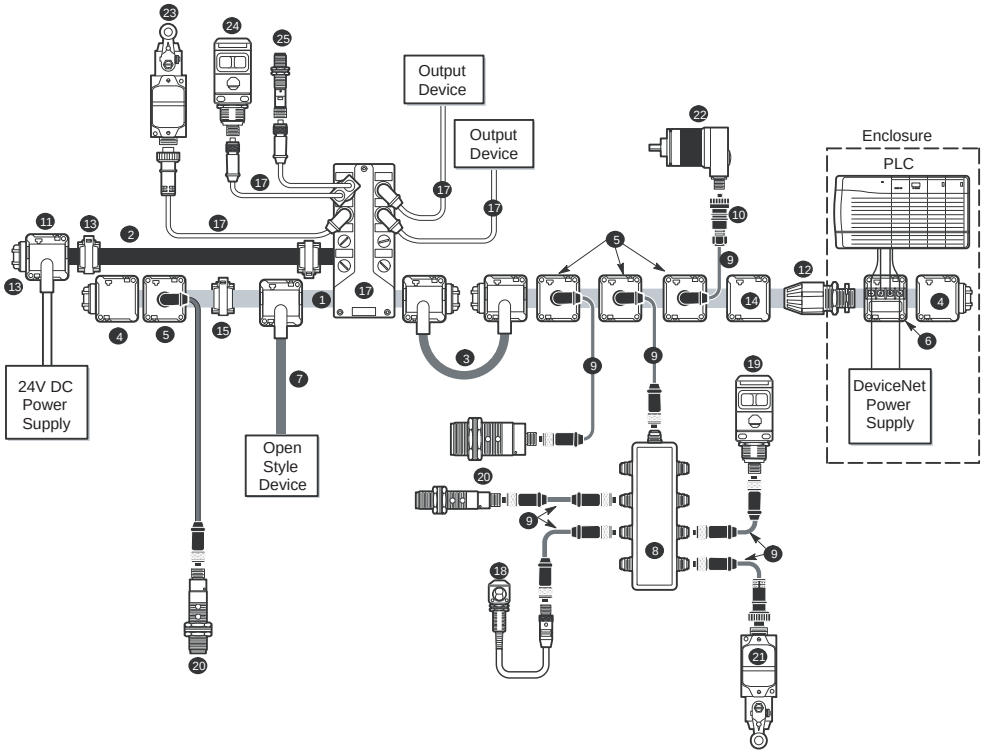
In order to support all of the options associated with the flexibility of KwikLink, Allen-Bradley offers an array of accessories including cable mounts, conduit adaptors, flat cable end caps and threaded plugs for sealing unused micro connectors.

	Description	Cat. No.
	Standalone Flat Cable End Cap	1485A-KCAP
	Micro Terminator, Male	**1485A-T1D5**
	Flat Cable Conduit Adapter	1485A-CAD
	Flat Cable Mounting Clamp	1485A-FCM

See Publication M117-CA001… for complete product information

DeviceNet Flat Media System — KwikLink Heavy Duty

Typical Configuration



1. Flat Trunk Cable
2. Flat Auxiliary Power Cable
3. Splice Kit
4. Terminator
5. Connector IDC
6. Open Style IDC
7. Class I Drop
8. DevicePort
9. KwikLink Drop Cable
10. Terminal Chamber
11. Auxiliary Power Drop
12. Conduit Adaptor
13. Flat Cable End Cap
14. Mounting Clamp
15. Dust Cap
16. ArmorBlock I/O
17. Standard Cordsets
18. DeviceNet RightSight
19. DeviceNet SmartSight 9000
20. DeviceNet Inductive
21. DeviceNet Limit Switch
22. DeviceNet Encoder
23. Standard Limit Switch
24. Standard Photoelectric
25. Standard Proximity

See Publication M117-CA001… for complete product information

DeviceNet Flat Media System — KwikLink Heavy Duty, continued

	Description		Cat. No.
	KwikLink Insulation Displacement Connectors Quick connection of distributed starters to DeviceNet network Micro M12 connector	★	**1485P-P1E4-R5**
	KwikLink Insulation Displacement Connectors Quick connection of distributed starters to DeviceNet network Open Style connector		**1485P-P1H4-T4**
	KwikLink Insolation Displacement Terminator, Unsealed		1485A-T1H4
	Standard KwikLink Heavy-Duty Splice Kit, Sealed		1485P-P1E4-S

★ For connecting drop cables, see table below.

KwikLink Flat Cable Trunk

(Only for use with KwikLink connector 1485P-P1E4-R5)

	Description	Spool	Rating	Used	Color	Cat. No.
	DeviceNet KwikLinkCL1 Trunk Cable	75 m	24V DC, 8 A (Class 1)	DeviceNet Trunk	Grey (TPE)	1485C-P1E75
	DeviceNet KwikLinkCL2 Trunk Cable		24V DC, 4 A (Class 2)		Light grey (PVC)	1485C-P1G75
	KwikLink Auxiliary Power Cable		24V DC, 8 A (Class 1)	Aux Power Trunk	Black (PVC)	1485C-P1L75
	DeviceNet KwikLinkCL1 Trunk Cable	200 m	24V DC, 8 A (Class 1)	DeviceNet Trunk	Grey (TPE)	1485C-P1E200
	DeviceNet KwikLinkCL2 Trunk Cable		24V DC, 4 A (Class 2)		Light grey (PVC)	1485C-P1G200
	KwikLink Auxiliary Power Cable		24V DC, 8 A (Class 1)	Aux Power Trunk	Black (PVC)	1485C-P1L200
	DeviceNet KwikLinkCL1 Trunk Cable	420 m	24V DC, 8 A (Class 1)	DeviceNet Trunk	Grey (TPE)	1485C-P1E420
	DeviceNet KwikLinkCL2 Trunk Cable		24V DC, 4 A (Class 2)		Light grey (PVC)	1485C-P1G420
	KwikLink Auxiliary Power Cable		24V DC, 8 A (Class 1)	Aux Power Trunk	Black (PVC)	1485C-P1L420

See Publication M117-CA001… for complete product information

DeviceNet Flat Media System — KwikLink Heavy Duty, continued

KwikLink Accessories

In order to support all of the options associated with the flexibility of KwikLink, Allen-Bradley offers an array of accessories including cable mounts, conduit adaptors, covers for unused nodes, and threaded plugs for sealing unused micro connectors.

	Description	Cat. No.
	Kwiklink Module Dust Cap	1485A-C5E4
	Flat Cable Conduit Adapter	1485A-CAD
	Flat Cable Mounting Clamp	1485A-FCM
	Flat Cable End Cap for KwikLink	**1485A-CAP**

DeviceNet Drop Cable

	Description	Cat. No.
	KwikLink Right Angle Micro Male to Straight Micro Female 1 m (3.28 ft)	1485K-P1F5-R5
	KwikLink Right Angle Micro Male to Straight Micro Female 2 m (6.56 ft)	1485K-P2F5-R5
	KwikLink Right Angle Micro Male to Straight Micro Female 3 m (9.84 ft)	1485K-P3F5-R5
	KwikLink Right Angle Micro Male to Straight Micro Female 4 m (13.1 ft)	1485K-P4F5-R5
	KwikLink Right Angle Micro Male to Straight Micro Female 5 m (16.4 ft)	1485K-P5F5-R5
	KwikLink Right Angle Micro Male to Straight Micro Female 6 m (19.7 ft)	1485K-P6F5-R5

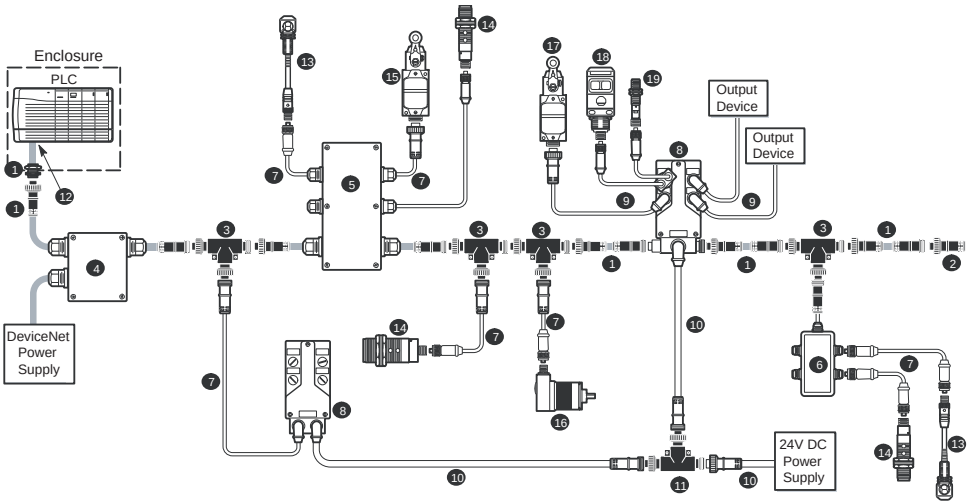
Note: These drop cables are only for use with the KwikLink flat cable system. They are not suitable for use with standard DiviceNet round cable systems.

See Publication M117-CA001… for complete product information

DeviceNet Round Media

Thick Trunk System

Typical Configuration



1. Thick Trunk Cable
2. Terminator
3. T-Port
4. Power Tap
5. DeviceBox
6. DevicePort
7. Thin Drop Cable
8. ArmorBlock I/O
9. Standard Cordsets
10. Aux Power Cable
11. Aux Power Tee
12. Open Terminator
13. DeviceNet Photoelectric
14. DeviceNet Inductive
15. DeviceNet Limit Switch
16. DeviceNet Encoder
17. Standard Limit Switch
18. Standard Photoelectric
19. Standard Proximity

CONNECTIVITY

Thick Trunk Cable

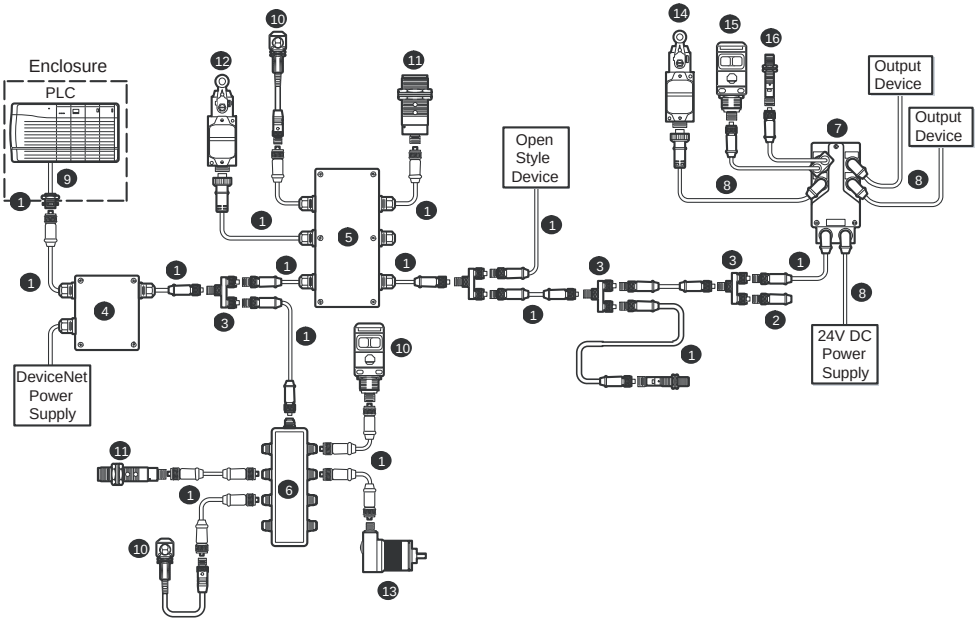
Description	Color	Spool	Cat. No.
DeviceNet Thick Trunk Cable	grey (PVC)	50 m	**1485C-P1A50**
		150 m	**1485C-P1A150**
		300 m	**1485C-P1A300**
		500 m	**1485C-P1A500**

See Publication M117-CA001… for complete product information

DeviceNet Round Media, continued

Thin Trunk System

Typical Configuration



1. Thin Drop Cable
2. Terminator
3. T-Port
4. Power Tap
5. DeviceBox
6. DevicePort
7. ArmorBlock I/O
8. Standard Cordsets
9. Open Terminator
10. DeviceNet Photoelectric
11. DeviceNet Inductive
12. DeviceNet Limit Switch
13. DeviceNet Encoder
14. Standard Limit Switch
15. Standard Photoelectric
16. Standard Proximity

Thin Trunk Cable

Description	Color	Spool	Cat. No.
DeviceNet Thin Trunk Cable	grey (PVC)	50 m	1485C-P1CG50
		150 m	1485C-P1CG150
		300 m	1485C-P1CG300
		600 m	1485C-P1CG600

See Publication M117-CA001… for complete product information

DeviceNet Round Media, continued

	Description		Cat. No.
Thick Trunk System			
	Power Tap (Thick Trunk)	7.5 A Fuse (2 included)	**1485T-P2T5-T5**
	2-port DeviceBox Tap, Thick Trunk, Cable Gland Connections	2 Drops	**1485P-P2T5-T5**
	4-port DeviceBox Tap, Thick Trunk, Cable Gland Connections	4 Drops	**1485P-P4T5-T5**
	8-port DeviceBox Tap, Thick Trunk, Cable Gland Connections	8 Drops	**1485P-P8T5-T5**
Thin Trunk System			
	Power Tap (Thin Trunk)	3 A Fuse (2 included)	**1485T-P2T5-T5C**
	2-port DeviceBox Tap (Thin Trunk).	2 Drops	1485P-P2T5-T5C
	4-port DeviceBox Tap (Thin Trunk).	4 Drops	1485P-P4T5-T5C
	8-port DeviceBox Tap (Thin Trunk).	8 Drops	**1485P-P8T5-T5C**

	Description	Trunk	Drop	Cat. No.
	4-port DeviceNet Thru-Trunk DevicePort	Mini	Mini Female	1485P-P4N5-MN5
	6-port DeviceNet Thru-Trunk DevicePort	Mini	Mini Female	1485P-P6N5-MN5
	4-port DeviceNet Thru-Trunk DevicePort	Mini	Micro Female	1485P-P4R5-MN5
	6-port DeviceNet Thru-Trunk DevicePort	Mini	Micro Female	1485P-P6R5-MN5

See Publication M117-CA001… for complete product information

DeviceNet Round Media ★, continued

	Description	Trunk	Drop	Cat. No.
	DeviceNet T-Port with Trunk and Drop connections Left Keyway	Micro	Micro	1485P-P1R5-DR5
	DeviceNet T-Port with Mini Trunk and Micro Drop connections Right Keyway	Mini	Micro	**1485P-P1R5-MN5R1**

	Description	Cable	Cat. No.
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 1 m (3.3ft)	yellow (CPE)	1485R-P1R5-F5
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 2 m (6.5ft)		1485R-P2R5-F5
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 3 m (9.8ft)		1485R-P3R5-F5
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 4m (13.1ft)		1485R-P4R5-F5
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 5m (16.4ft)		1485R-P5R5-F5
	Pre-terminated Thin Cable: Right Angle Micro Male to Straight Micro Female: 6m (19.8ft)		1485R-P6R5-F5
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 1 m (3.3ft)	yellow (CPE)	**1485R-P1R5-D5**
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 2 m (6.5ft)		1485R-P2R5-D5
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 3 m (9.8ft)		1485R-P3R5-D5
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 4 m (13.1ft)		1485R-P4R5-D5
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 5m (16.4ft)		1485R-P5R5-D5
	Pre-terminated Thin Cable: Straight Micro Male to Straight Micro Female: 6m (13.1ft)		1485R-P6R5-D5

★ For use with distributed starters. See publication M117-CA001… for complete cable selection information.

DeviceNet Round Media ★, continued

	Description	Trunk	Drop	Cat. No.
	DeviceNet T-Port with Mini Trunk and Mini Drop connections Left Keyway	Mini	Mini	**1485P-P1N5-MN5L1**
	DeviceNet T-Port with Mini Trunk and Mini Drop connections Right Keyway	Mini	Mini	**1485P-P1N5-MN5R1**

	Description	Cable	Cat. No.
	DeviceNet Thick Trunk or Drop Cable	grey (PVC)	**1485C-P1N5-M5**
	DeviceNet Thick Trunk or Drop Cable		1485C-P3N5-M5
	DeviceNet Thick Trunk or Drop Cable		1485C-P5N5-M5
	DeviceNet Thick Trunk Cable		1485C-P10N5-M5
	DeviceNet Thick Trunk Cable		1485C-P30N5-M5
	DeviceNet Mini Male to Micro Female 1 m (3.28 ft.)	yellow (CPE)	1485R-P1M5-R5
	DeviceNet Mini Male to Micro Female 2 m (6.56 ft.)		1485R-P2M5-R5
	DeviceNet Mini Male to Micro Female 3 m (9.84 ft.)		1485R-P3M5-R5
	Pre-terminated Thin Cable: Straight Mini Male to Straight Micro Female: 4m (13.1ft)		1485R-P4M5-R5

★ For use with distributed starters. See publication M117-CA001… for complete cable selection information.

See Publication M117-CA001… for complete product information

Other styles (connectors, cordsets and patchcords) and lengths are available, please consult your local Rockwell Automation distributor for details.

DeviceNet Round Media, continued

Terminal Chambers

Terminal chambers are passive field-installable connectors. Allen-Bradley 5-pin micro style and 5-pin mini style terminal chambers are designed for use with DeviceNet systems. These connectors contain screw terminals for quick and easy installation and are sized for use with either DeviceNet thick or thin cables.

	Description	Media Use	Connector	Cat. No.
	5-pin Straight Mini Male Terminal Chamber, Thick, screw type	Thick	Straight Mini Male	**871A-TS5-NM3**
	5-pin Straight Mini Female Terminal Chamber, Thick, screw type		Straight Mini Female	**871A-TS5-N3**
	5-pin Straight Terminal Chamber	Thin	Straight Mini Male	871A-TS5-NM1
	5-pin Straight Terminal Chamber		Straight Mini Female	**871A-TS5-N1**
	5-pin Straight Terminal Chamber	Thin	Straight DC Micro Male	**871A-TS5-DM1**
	5-pin Straight Terminal Chamber		Straight DC Micro Female	**871A-TS5-D1**
	5-pin Right Angle Terminal Chamber	Thin	Right Angle DC Micro Male	871A-TR5-DM1
	5-pin Right Angle Terminal Chamber		Right Angle DC Micro Female	871A-TR5-D1

Terminators

	Description	Media Use	Cat. No.
	Micro Terminator, Male	Thick or Thin	**1485A-T1M5**
	Micro Terminator, Female		**1485A-T1N5**
	Micro Terminator, Male	Thick	**1485A-T1D5**
	Micro Terminator, Female		1485A-T1R5

DeviceNet™ Round Media, continued

Open Style Connectors

	Description	Cat. No.
	DeviceNet Terminal Block Assembly With color coded double tier terminals	**1492-DN3TW**
	5-pin Linear Plug, Open-style	1799-DNETCON
	5-pin Linear Plug, Open-style, with Jack Screws	**1799-DNETSCON**
	Open-style, 10-position Linear Plug	**1787-PLUG10R**
Thin Trunk System		
	Terminating Resistor	**1485A-C2**
	Accessory Kit for DeviceBox	1485A-ACCKIT

Bulkhead Pass-thru

	Description	Media Use	Cat. No.
	Mini 5-pin Bulkhead Pass-thru	Thick or Thin	1485A-CXN5-M5
	Micro 5-pin Bulkhead Pass-thru	Thin	1485A-CXR5-D5

See Publication M117-CA001… for complete product information

Connection Systems: Cordsets, Ethernet

M12 D Coded Connectivity

- Over molded housing suitable for IP67 applications and harsh industrial environments where extreme vibration, shock, chemicals and temperature are found.
- Flex rated cable (cable must be tied down and not flexed within 6 inches of the connector
- Single-ended cordsets can be custom terminated with one of several field attachable connectors
- Designed to ODVA EtherNet/IP specifications and ISO IEC 24702, IEC 61918
- Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss
- Suitable environments $M_3I_3C_3E_3$

Cable Type	Connector Type	Cat. No.
Unshielded		
4 conductor, teal TPE, flex rated	Straight male to straight male	1585D-M4TBDM-★
	Straight male to right angle male	1585D-M4TBDE-★
	Right angle male to right angle male	1585D-E4TBDE-★
	Straight male to RJ45	1585D-M4TBJM-★
	Straight male to flying leads	1585D-M4TB-★
Shielded		
4 conductor, teal TPE, flex rated	Straight male to straight male	1585D-M4UBDM-★
	Straight male to right angle male	1585D-M4UBDE-★
	Right angle male to right angle male	1585D-E4UBDE-★
	Straight male to RJ46	1585D-M4UBJM-★

★ Replace symbol with 0M3 (0.3 m), 0M6 (0.6 m), 1 (1 m), 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.

Connection Systems: Cordsets, Ethernet

RJ45 Connectivity

- Flex rated TPE, PVC, and Plenum cables for various applications
- Teal or red cable jacket
- Rugged strain relief and hitch mechanism to maintain network integrity

Cable Type	Cable Rating	Cat. No.
Unshielded		
4 conductor, teal high-flex TPE	UL CMG, CMX; cUL CMG; Standard TIA 568-B	1585J-M4TB-★
4-Conductor, Teal Robotic TPE	Weld splatter, sun light and oil resistant; UL CMG, CMX; cUL CMG; Standard TIA 568-B, flex rated	1585J-M4TBJM-★
8-Conductor, Teal Robotic TPE		1585J-M8TBJM-★
8-Conductor, Red Robotic TPE		1585J-M8VBJM-★
8-Conductor, Teal Riser PVC	UL CMR, CMX; cUL CMG; Standard TIA 568-B	1585J-M8PBJM-★
8-conductor, Red Plenum	UL CMP; cUL CMP; Standard TIA 568 B	1585J-M8MBJM-★
Shielded		
RJ45 Male to RJ45 Male, Cat 6	UL CMR; CUR CMG, TIA B	1585J-M8CBJM-★
	C(ETL)US TYPE CMX; TIA 568-B, flex-rated, halogen-free	1585J-M8UBJM-★
	(UL) CMX, CMR; c(UL) CMG; (UL) PLTC or AWM 2570 80°C 600V; TIA-568-B	1585J-M8HBJM-★

★ Replace symbol with 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.

Connection Systems: Ethernet Media

Cable Spools

Allen-Bradley Ethernet Media is available in raw spools as well as specified lengths with any of several connectors pre-attached. Cordsets and patchcords are prewired to assure reliable connection. Field Attachable connectors are also offered in a variety of selections for custom lengths and applications. These specially designed cables are unshielded and offered in two- and four-pair.

- Four- and eight-conductor styles
- Unshielded and shielded cable types, Cat 5e
- 24 AWG conductors
- Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss
- Designed to ODVA EtherNet/IP specifications and ISO IEC 24702, IEC 61918
- Flex cables are tested for 10 million cycles

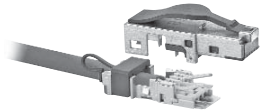
Jacket Material	No. of Conductors	Nominal Outer Diameter	Jacket Color	Color Code	Cable Rating	Cat. No.
Unshielded						
Robotic TPE	4 (two pair)	5.6 mm (0.22 in.)	Teal	White/Orange, White/Green, Orange, Green	Weld splatter, sunlight and oil resistant; UL CM, CMX; cUL CM; Standard TIA 568-B, high flex rated	1585-C4TB-S★
Robotic TPE	8 (four pair)	5.84 mm (0.23 in.)	Teal	White/Orange, Orange, White/Green, Blue, White/Blue, Green, White/Brown, Brown		1585-C8TB-S★
Robotic TPE	8 (four pair)		Red			1585-C8VB-S★
Plenum	8 (four pair)		Red		UL CMP; cUL CMP; Standard TIA 568-B	1585-C8MB-S★
Riser PVC	8 (four pair)		Teal		UL CMR; CMG; cUL CMG; Standard TIA 568-B	1585-C8PB-S★
Shielded						
Riser PVC	8 (four pair)	5.6 mm (0.22 in.)	Teal	—	UL CMR; cUL CMG; TIA-568-B	1585-C8CB-S★
Robotic PUR	4 (two pair)	—	Teal	—	C(ETL)US TYPE CMX; TIA 568-B, Flex rated, Halogen-Free	1585-C4UB-S★
Robotic PUR	8 (four pair)		Teal	—		1585-C8UB-S★
Riser 600V PVC	8 (four pair)		Teal	—	(UL) CMX, CMR; c(UL) CMG; (UL) PLTC or AWM 2570 80 °C 600V; TIA-568-B	1585-C8HB-S★

★ Replace symbol with 100 (100 m), 300 (300 m), or 600 (600 m) for standard cable lengths.

Connection Systems: EtherNet

IDC Connector

- 26-22 AWG Conductors
- 360° Shielding
- Re-use IDC Connector Up to Five Times
- No Tools or Conductor Stripping Required
- Cat. 6



RJ45 Insulation Displacement Connector (IDC)

Crimp Connector

- 26…24 AWG
- Standard Crimp Connector with Rugged Boot
- Cat. 5e

RJ45 Crimp

Description	Electrical Connection	Housing Material	Insulation Material	Contact Material	Channel Bandwidth		Cat. No.
RJ45 insulation displacement connector (IDC)	—	Diecast Zinc	Plastic	Gold-plated copper alloy	Cat. 6		1585J-M8CC-SH
RJ45 crimp connector with boot	150V, 1.5 A	Clear Polycarbonate			Cat. 5e	‡	1585J-M8CC-C
Crimper, cable stripper/cutter, conductor separator	—	—			—		1585A-JCRIMP

‡ Qty. = 50 pieces

Ethernet M12 Media

Insulation Displacement Connector (IDC)

- Feld installable with no hand tools needed
- Straight male or female shielded versions
- Allows easy modification of existing cable installations
- Insulation displacement technology for secure and reliable installation
- Metal body unit excellent in shielding applications

No. of Pins	Connector Material	Cable Diameter [mm (in.)]	Wire Size	Assembly Rating	Connector Style	Cat. No.
4	Polyamide small body unshielded	4.0…5.1 (0.16…0.20)	#26…22 AWG	32V, 4 A	Straight Male	1585D-M4DC-H
	Zinc die-cast large body shielded	5.5…7.2 (0.22…0.28)			Straight Male	1585D-M4DC-SG
					Straight Female	**1585D-F4DC-SH**

4-Pin, M12 Receptacle & M12 to RS45 Adaptor

- #24 AWG conductors
- 4-pin D-coded M12 configuration
- M12 to RS45 bulkhead
- IP67

Description	Mounting	Assembly Rating	Cat. No.
Female M12 receptacle to RJ45 female adaptor right angle	PG 9 Panel Mount Threads	#32V, 4 A	1585A-DD4JD

CONNECTIVITY

Stratix 2000 Unmanaged

The Stratix 2000 unmanaged line scales from 4 to 8 ports and offers a variety of copper and fiber options. Stratix 2000 unmanaged switches are easy to apply, requiring no configuration. Complementary IP67, managed and Enterprise integrated switches will fill out the Ethernet switch portfolio.

- Optimized for small, isolated networks
- Requires no configuration
- Auto negotiation
- Auto crossing

Description	Power Requirements	Operating Temp.	Dimensions (H, W, D) [mm]	Cat. No.
4 copper ports, 1fiber with LC-connector	10…35V DC	0…60 °C	28x108x127	**1783-US03T01F**
5 copper ports	10…35V DC	0…60 °C	28x108x127	**1783-US05T**
7 copper ports, 1fiber with LC-connector	10…35V DC	0…60 °C	45x108x127	1783-US06T01F
8 copper ports	10…35V DC	0…60 °C	45x108x127	**1783-US08T**

Bulletin	1732
Type	**ArmorBlock I/O**
Features	• Sealed housing rated for IP67K and NEMA 4X eliminate enclosure costs • I/O connectors are sealed M8 pico or M12 DC micro styles • 8-point and 16-point self-configuring I/O provides flexibility for any input/output combination • Removal and Insertion Under Power allows module replacement without impacting the network operation • Isolated auxiliary power maintains power to the outputs if main power fails • Outputs electronically protected from failing with option to auto-restart or latch off • Complies with Open DeviceNet Vendor Association, Inc. (ODVA) conformance test software
I/O	8 or 16 digital points
Analog Inputs/ Outputs	—
Software	
Mounting	On-Machine Panel
Operating Power	24V DC
Standards/ Approvals	IP65, IP66, IP67K, NEMA 4X, cULus, CE, C-Tick
Product Selection	**See page 4-33**

ArmorBlock Digital I/O Blocks

- Sealed housing rated for IP-69K and NEMA 4X eliminate enclosure costs.
- Low installation cost and easy to replace without rewiring because industry-standard M12 DC micro connectors are used for connection to the DeviceNet network and auxiliary power supply. I/O connectors are sealed M8 pico or M12 DC micro styles.
- 8-point and 16-point self-configuring I/O provides flexibility for any input/output combination.
- Removal and Insertion Under Power makes it possible to replace a module without impacting the network operation.
- Isolated auxiliary power maintains power to the outputs if main power fails so that you can have the option of holding outputs in their last state.
- Outputs electronically protected from failing with option to autorestart or latch off.
- Complies with Open DeviceNet Vendor Association, Inc. (ODVA) conformance test software.

ArmorBlock I/O — DeviceNet

Description	Cat. No.
DeviceNet, Input Module, 8 Sink Inputs, Pico (M8) connector	1732D-IB8M8
DeviceNet, Input Module, 8 Sink Inputs, DC Micro (M12) connector	1732D-IB8M12
DeviceNet, Input Module, 16 Sink Inputs, DC Micro (M12) connector	1732D-IB16M12M12
DeviceNet, Input Module, 16 Sink Inputs, DC Micro (Mini) connector	1732D-IB16M12MINI
DeviceNet, Output Module, 8 Source Outputs, Pico (M8) connector	1732D-OB8EM8
DeviceNet, Output Module, 8 Source Outputs, DC Micro (M12) connector	1732D-OB8EM12
DeviceNet, Output Module, 16 Source Outputs, DC Micro (M12) connector	1732D-OB16M12M12
DeviceNet, Output Module, 16 Source Outputs, DC Micro (Mini) connector	1732D-OB16M12MINI
DeviceNet, Self-configuring Module, 8 point I/O, Pico (M8) connector	**1732D-8CFGM8**
DeviceNet, Self-configuring Module, 8 point I/O, DC Micro (M12) connector	1732D-8CFGM12
DeviceNet, Self-configuring Module, 16 point I/O, DC Micro (M12) connector	1732D-16CFGM12M12
DeviceNet, Self-configuring Module, 16 point I/O, DC Micro (Mini) connector	1732D-16CFGM12MN

ArmorBlock I/O — EtherNet/IP

Description	Cat. No.
EtherNet, Input module, 16 points, DC Micro (M12) connector	1732E-IB16M12
EtherNet, Output module, 16 points, DC Micro (M12) connector	1732E-OB16M12
EtherNet, Self-configuring, 16 points, DC Micro (M12) connector	**1732E-16CFGM12**

ArmorBlock I/O — EtherNet/IP Dual Port

Description	Cat. No.
EtherNet/IP Dual Port, Input Module, 16 points, DC Micro(M12) connector	1732E-IB16M12R
EtherNet/IP Dual Port, Input Module, 16 points, Diagnostics, DC Micro(M12) connector	1732E-IB16M12DR
EtherNet/IP Dual Port, 8 Inputs, 8 Outputs, Diagnostics, DC Micro(M12) connector	1732E-8X8M12DR
EtherNet/IP Dual Port, Output Module, 16 points, DC Micro(M12) connecto	1732E-OB16M12R
EtherNet/IP Dual Port, Output Module, 16 points, Diagnostics, DC Micro(M12) connector	1732E-OB16M12DR
EtherNet/IP Dual Port, Self-configuring Module, 16 points, DC Micro(M12) connector	1732E-16CFGM12R

Cables and Cordsets

The Cable and Cordset tables list the most common cable, patchcords, and cordsets for the I/O module.
You can also find additional information on selecting cables and cordsets for ArmorBlock I/O in these publications:

- On-Machine Connectivity Catalog
  http://literature.rockwellautomation.com/idc/groups/literature/documents/ca/m117-ca001_-en-p.pdf
- On-Machine Solutions Selection Guide
  http://literature.rockwellautomation.com/idc/groups/literature/documents/sg/onmach-sg001_-en-p.pdf

ArmorBlock I/O Cables

For Using:	Recommended Patchcord (double-ended)	Recommended Male Cordset (single-ended)	Cat. No.
2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5	1732D-IB8M12
1 input per connector	889D-F4ACDM-x	889D-M4AC-x	
3-pin pico connectors	889P-F3ABPM-x	889P-M3AB-y	1732D-IB8M8
4-pin pico connectors	889P-F4ABPM3-x		
2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5	1732D-OB8EM12
1 input per connector	889D-F4ACDM-x		
3-pin pico connectors	889P-F3ABPM-x	889P-M3AB-y	1732D-OB8EM8
4-pin pico connectors	889P-F4ABPM3-x	889P-M3AB-y	
2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5	1732D-8CFGM12
1 input per connector	889D-F4ACDM-x	889D-M4AC-x	
3-pin pico connectors	889P-F3ABPM-x	889P-M3AB-y	**1732D-8CFGM8**
4-pin pico connectors	889P-F4ABPM3-x		

x = length in meters (1, 2, 3, 5, and 10 standard).
y = length in meters (2, 5, and 10 standard).

ArmorBlock DeviceNet and Auxiliary Power Cables

Recommended DeviceNet Cable	Recommended Auxiliary Power Cables	Cat. No.
KwikLink Flat Media system standard drop cable: 1485K-PzF5-R5 Thick Round system standard drop cable: 1485R-PzM5-R5 Thin Round system standard drop or trunk: 1485R-PzR5-D5	Standard Cordset (single-ended): 889D-F4AC-y Standard Patchcord (double-ended): 889D-F4ACDM-x	1732D-IB8M12 1732D-IB8M8 1732D-OB8EM12 1732D-OB8EM8 1732D-8CFGM12 **1732D-8CFGM8**

x = length in meters (1, 2, 3, 5, and 10 standard).
y = length in meters (2, 5, and 10 standard).

Cable Selection

Bulletin	**889D**	**889R**	**889N**	**889P**
Type	**DC Micro QD / M12 Cordsets and Patchcords**	**AC Micro QD / M12 Cordsets**	**Mini QD Cordsets**	**Pico QD / M8 Cordsets and Patchcords**
Features	• 4-, 5- and 8-pin connectors • Straight or right angle versions • 22 AWG or 24 AWG cable • Oil resistant yellow or black PVC jacket	• 3-, 4-, 5- and 6-pin connectors • Straight or right angle female connector • Standard 18 AWG cable • Oil resistant yellow PVC jacket	• 3-, 4-, and 5-pin connectors • Straight or right angle versions • Heavy duty STOOW 16 AWG cable • Oil resistant yellow PVC jacket	• 3- or 4-pin connectors • Straight or right angle female • Standard 24 AWG cable • Oil resistant yellow PVC jacket
Product Selection	**See page 4-36**	**See page 4-38**	**See page 4-39**	**See page 4-40**

Bulletin	**898D and 898P**	**871A and 889D**
Type	**DC Micro and Pico Distribution Boxes**	**DC Micro Field Attachable Connectors**
Features	• 4-pin DC micro or 3-pin pico connectors • Top mount inputs • 4- or 8-port parallel wired • PNP wired LED versions • Single input per port • Prewired master cable • Rugged grey Pocan body	• 4-pin connector • Male and female versions • Screw terminal or insulation displacement connection • Glass filled nylon connector body • Supports cable O.D.s from 4…8 mm
Product Selection	**See page 4-41**	**See page 4-42**

Bulletin	**898D**
Type	**Safety Wired Distribution Box**
Standards Compliance	Conforms to EN 954-1, ISO 13849-1, EN/IEC 60204-1, NFPA79, EN 1088, ISO 14119, EN/IEC 60947-5-1, ANSI B11.19, AS4024.1
Certifications	cULus, TÜV, and CE Marked for all applicable directives
Features	• Four and eight DC micro connectors • 19-pin M23 quick disconnect • LED version for use with PNP (sourcing) field devices • Snap-in markers for box and port identification can be used with 1492 Fast Track marker printer system
Product Selection	**Page 4-41**

DC Micro QD / M12 Cordsets

- 4- and 5-pin DC micro style (M12)
- UL recognized and CSA certified
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- Ratcheting coupling nut for vibration resistance

Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 Brown 2 White 3 Blue 4 Black	22 AWG 300V 4 A	2 (6.56)	**889D-F4AC-2**
			5 (16.4)	**889D-F4AC-5**
			10 (32.8)	**889D-F4AC-10**
Right Angle Female			2 (6.56)	**889D-R4AC-2**
			5 (16.4)	**889D-R4AC-5**
			10 (32.8)	**889D-R4AC-10**
Straight Female	1 Brown 2 White 3 Blue 4 Black 5 Grey		2 (6.56)	**889D-F5AC-2**
			5 (16.4)	**889D-F5AC-5**
			10 (32.8)	**889D-F5AC-10**

DC Micro QD / M12 Cordsets, Shielded

Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 Brown 2 White 3 Blue 4 Black	300V 4 A	2 (6.56)	889D-F4EC-2

DC Micro QD / M12 Cordsets

- 8-pin/8-wire configurations for GuardShield safety light curtains and other applications
- Ratching coupling nuts for vibration resistance

Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 White 2 Brown 3 Green 4 Yellow 5 Grey 6 Pink 7 Blue 8 Red	24 AWG 30V AC/36V DC 1.5 A	2 (6.56)	**889D-F8AB-2**
			5 (16.4)	**889D-F8AB-5**
			10 (32.8)	**889D-F8AB-10**

Above cordsets also with "Right Angle" connector available, for example: **889D-R8AB-_**

Patchcords, DC Micro QD / M12 Style

- 4- or 5-pin DC micro style (M12)
- UL recognized and CSA certified
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- Ratcheting coupling nut for vibration resistance

Female (Sensor End) Connector Style	Cable		Male (I/O End) Connector Style	Cat. No.
	Wire Rating	Length [m (ft)]		
Straight	22 AWG 300V 4 A	1 (3.3)	Straight	889D-F4ACDM-1
		2 (6.56)		889D-F4ACDM-2
		5 (16.4)		889D-F4ACDM-5
		10 (32.8)		889D-F4ACDM-10
		1 (3.3)	Right Angle	889D-F4ACDE-1
		2 (6.56)		889D-F4ACDE-2
		5 (16.4)		889D-F4ACDE-5
		10 (32.8)		889D-F4ACDE-10
Right Angle		1 (3.3)	Straight	889D-R4ACDM-1
		2 (6.56)		889D-R4ACDM-2
		5 (16.4)		889D-R4ACDM-5
		10 (32.8)		889D-R4ACDM-10
		1 (3.3)	Right Angle	889D-R4ACDE-1
		2 (6.56)		889D-R4ACDE-2
		5 (16.4)		889D-R4ACDE-5
		10 (32.8)		889D-R4ACDE-10
Straight		1 (3.3)	Straight	889D-F5ACDM-1
		2 (6.56)		889D-F5ACDM-2
		5 (16.4)		889D-F5ACDM-5
		10 (32.8)		889D-F5ACDM-10

AC Micro QD / M12 Cordsets

- 3- and 4-pin AC micro style (dual key)
- Straight and right angle versions
- UL recognized and CSA certified
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- Ratcheting coupling nut for vibration resistance

Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 Green (GND) 2 Red/Black Tr. 3 Red/White Tr.	Braided 22 AWG Braided 22 AWG 250V 4 A	2 (6.5)	889R-F3ECA-2
Straight Female	1 Green (GND) 2 Red/Black Tr. 3 Red/White Tr.	18 AWG 250V 4 A	2 (6.5)	889R-F3AEA-2
			5 (16.4)	889R-F3AEA-5
			10 (32.8)	889R-F3AEA-10
	1 Red/Black Tr. 2 Red/White Tr. 3 Red 4 Green (GND)		2 (6.5)	889R-F4AEA-2
			5 (16.4)	889R-F4AEA-5
			10 (32.8)	889R-F4AEA-10
Right Angle Female	1 Green (GND) 2 Red/Black Tr. 3 Red/White Tr.		2 (6.5)	889R-R3AEA-2
			5 (16.4)	889R-R3AEA-5
			10 (32.8)	889R-R3AEA-10
	1 Red/Black Tr. 2 Red/White Tr. 3 Red 4 Green (GND)		2 (6.5)	889R-R4AEA-2
			5 (16.4)	889R-R4AEA-5
			10 (32.8)	889R-R4AEA-10
Straight Female	1 Red/White Tr. 2 Red 3 Green 4 Red/Yellow Tr. 5 Red/Black Tr.	18 AWG 250V 4 A	2 (6.5)	889R-F5AEA-2
			5 (16.4)	889R-F5AEA-5
			10 (32.8)	889R-F5AEA-10
	1 Red/White Tr. 2 Red 3 Green 4 Red/Yellow Tr. 5 Red/Black Tr. 6 Red/Blue Tr.	Braided 22 AWG 250V 4 A	2 (6.5)	889R-F6ECA-2
			5 (16.4)	**889R-F6ECA-5**
			10 (32.8)	**889R-F6ECA-10**

Mini QD Cordsets

- 3-, 4- and 5-pin configurations
- Straight and right angle versions
- UL recognized and CSA certified
- Heavy duty STOOW-A 16 AWG cable
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- One-piece molded body design

Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 Green 2 Black 3 White	16 AWG 600V 13 A	1.8 (6)	889N-F3AFC-6F
			3.7 (12)	889N-F3AFC-12F
			6.1 (20)	889N-F3AFC-20F
	1 Black 2 White 3 Red 4 Green	16 AWG 600V 10 A	1.8 (6)	889N-F4AFC-6F
			3.7 (12)	889N-F4AFC-12F
			6.1 (20)	889N-F4AFC-20F
	1 White 2 Red 3 Green 4 Orange 5 Black	16 AWG 600V 8 A	1.8 (6)	889N-F5AFC-6F
			3.7 (12)	889N-F5AFC-12F
			6.1 (20)	889N-F5AFC-20F
Right Angle Female	1 Green 2 Black 3 White	16 AWG 600V 13 A	1.8 (6)	889N-R3AFC-6F
			3.7 (12)	889N-R3AFC-12F
			6.1 (20)	889N-R3AFC-20F
	1 Black 2 White 3 Red 4 Green	16 AWG 600V 10 A	1.8 (6)	889N-R4AFC-6F
			3.7 (12)	889N-R4AFC-12F
			6.1 (20)	889N-R4AFC-20F
	1 White 2 Red 3 Green 4 Orange 5 Black	16 AWG 600V 8 A	1.8 (6)	889N-R5AFC-6F
			3.7 (12)	889N-R5AFC-12F
			6.1 (20)	889N-R5AFC-20F

Pico QD / M8 Style Cordsets

- 3-, 4- and 5-pin configurations
- Straight and right angle versions
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- Heavy duty STOOW-A 16 AWG cable
- Screw-on coupling nut for rugged reliable connection
- Ratcheting coupling nuts for vibration resistance

Female (Sensor End) Connector Style	Cable			Cat. No.
	Wire Color	Wire Rating	Length [m (ft)]	
Straight Female	1 Brown 3 Blue 4 Black	24 AWG 60V AC/75V DC 4 A	2 (6.5)	889P-F3AB-2
			5 (16.4)	**889P-F3AB-5**
			10 (32.8)	889P-F3AB-10
Right Angle Female			2 (6.5)	889P-R3AB-2
			5 (16.4)	889P-R3AB-5
			10 (32.8)	889P-R3AB-10
Straight Female	1 Brown 2 White 3 Blue 4 Black		2 (6.5)	889P-F4AB-2
			5 (16.4)	**889P-F4AB-5**
			10 (32.8)	889P-F4AB-10

CONNECTIVITY

Patchcords, Pico QD / M8 Style

- 4-pin pico style (M8)
- UL recognized and CSA certified
- Highly visible yellow PVC jacket offers good oil and chemical resistance
- Ratcheting coupling nut for vibration resistance

Female (Sensor End) Connector Style	Cable		Male Connector (I/O End) Connector Style	Cat. No.
	Wire Rating	Length [m (ft)]		
Straight	24 AWG 60V AC/75V DC 4 A	1 (3.3)	Straight	889P-F3ABPM-1
		2 (6.5)		889P-F3ABPM-2
		5 (16.4)		889P-F3ABPM-5
		10 (32.8)		889P-F3ABPM-10

Distribution Boxes, 4- and 8-Port DC Micro Style

- UL recognized and CSA certified
- Grey Pocan body offers good oil and chemical resistance
- 4 and 8 4-pin DC micro connectors
- Cable versions
- LED versions for use with PNP (sourcing) field devices

No. of Connections	Illuminated	Ratings	Cable Length—mm (in)	Cat. No.
4	PNP LED	10…30V DC 2 A max./port 10 A max. total	5 (16.4)	898D-P54PT-B5
			10 (32.8)	898D-P54PT-B10
8			5 (16.4)	898D-P58PT-B5
			10 (32.8)	898D-P58PT-B10

Safety Wired Distribution Box

- Prewired for compatability with safety dual-channel, three-channel switches, and SensaGuard
- Versions to Category 4, SIL3
- Enunciation models identify open contacts via LEDs on the box and discrete wire in homerun connection

Safety Switch Configuration	Enunciation	Connection Type	No. of Ports	Home Run Connection	Cat. No.
2 OSSD ‡	Yes	8-pin DC micro	4	M23, 19-pin	898D-P84RT-M19
2 OSSD ‡	Yes	8-pin DC micro	8	M23, 19-pin	898D-P88RT-M19

‡ SensaGuard compatible.

Distribution Boxes, 4- and 8-Port Pico Style

- 3-pin pico connectors
- Top mounting holes for easier installation
- LED versions for use with PNP (sourcing) field devices or 24V DC actuators

No. of Connections	Illuminated	Ratings	Cable Length—mm (in)	Cat. No.
4	PNP LED	10…30V DC 2 A max./port 6 A max. total	5 (16.4)	898P-P34PT-B5
8				898P-P38PT-B5

Terminal Chambers, DC Micro Style

- Field installable
- 4-pin DC micro style (M12)
- Straight or right angle versions
- Screw terminals provide simple and secure installation
- Allows easy modification of existing cable installations

Type	No. of Pins	Connector Style	Jacket Cable Diameter [mm (in)]	Wire Rating	Cat. No.
Female	4-Pin	Straight Female	4.0…6.0 (0.16…0.24)	250V, 4 A	871A-TS4-D
			6.0…8.0 (0.24…0.32)		871A-TS4-D1
Male	4-Pin	Straight Male	4.0…6.0 (0.16…0.24)	250V, 4 A	871A-TS4-DM
			6.0…8.0 (0.24…0.32)		871A-TS4-DM1
Male	8-Pin	Straight Male	6.0…8.0 (0.24…0.32)	250V, 4 A	**871A-TS8-DM1**

No. of Pins	Cable Jacket Diameter [mm (in.)]	Assembly Rating	Rear Nut Thread Size	Cat. No.	
				Straight Female	Straight Male
3-Pin	3.5…5.0 (0.14…0.20)	60V, 4 A	PG 7	**871A-TS3-P**	**871A-TS3-PM**
4-Pin				**871A-TS4-P**	**871A-TS4-PM**

Field Attachable, DC Micro Style

- Field installable with no hand tools needed
- 4-pin DC micro style
- Straight male or female versions
- Allows easy modification of existing cable installations
- Insulation displacement technology for secure and reliable installation

Type	Connector Style	Jacket Cable Diameter [mm (in)]	Wire Rating	Cat. No.
Female	Straight Female	4.0…5.1 (0.16…0.20)	32V, 4 A	889D-F4DC-H
Male				889D-M4DC-H

Safety

TABLE OF CONTENTS

Safety Interlock and Guard Locking Switches	5-2
E-stops and Trip Devices	5-8
Presence Sensing	5-12
Safety Relays and Controllers	5-21
Safety Enabled Actuators	5-29

Safety Interlock & Guard Locking Switches

Product Line Overview

Safety Interlock Switches (440N-Z, 440N-S, 440K, 440G)

Bulletin	**440N-Z**	**440N-S**	**440K**	**440G**
Type	**SensaGuard RF-ID Coded Non Contact Switches**	**Sipha Magnetically Coded Non Contact Switches**	**Tongue Operated Switches**	**Guard Locking Switches**
Features	• SIL3/PLe rated switch even with mutliple units wired in series • Coded/Uniquely coded options available • No dedicated controller • Large sensing distances (up to 25 mm) • Plastic or stainless steel housing options • IP69K for all models • Integrated latch version with 20N,40N and 60N holding force • Pre-wired or quick disconnect options (QD) • Extended diagnostics	• Coded magnetic operation - resistant to defeat • Plastic or stainless steel housing options • Pre-wired or quick disconnect options (QD) • Sensor, controller and contactor monitoring • Selection of control units available • Ideal for medium to high risk applications	• Selection of actuators available • Versions available with quick disconnect (QD) • GD2 versions offer increased robustness	• Selection of actuators available • Versions available with quick disconnect (QD) • Ideal for use in applications with machine run-down, ensuring the guard remains closed until hazardous motion has ceased
Approvals	CE marked for all applicable directives and approved by cULus and TUV where relevant	CE marked for all applicable directives and approved by cULus and TUV where relevant	CE marked for all applicable directives and approved by cULus and TUV where relevant	CE marked for all applicable directives and approved by cULus and TUV where relevant
Standards	Conform to standards EN 60947-5-3, IEC 61508, EN ISO 13849-1	Conform to standards EN 60947-5-1, EN 1088 (ISO14119), EN ISO 12100, EN 60204-1	Conform to EN 1088 (ISO 14119), EN ISO 13849-1, EN 60947-1, EN 60204-1	Conform to EN 1088 (ISO 14119), EN ISO 13849-1, EN 60947-1, EN 60204-1
Product Selection	**See page 5-3**	**See page 5-5**	**See page 5-6**	**See page 5-7**

440N-Z SensaGuard RF-ID Coded Non Contact Switches

Features

- No dedicated controller needed
- SIL3/PLe maintained even with switches wired in series
- Multiple actuator sizes for large sensing distance typically (15…25 mm)
- IP69K environmental rating
- Short circuit and over voltage protection
- Led located on the switch for door status and troubleshooting
- 2 Safety PNP outputs and 1 auxiliary PNP output
- Unique coded version
  - Automatic learn process at unit power up
  - During commissioning you have the option to select if the sensor can learn a new actuator up to eight times or lock the unit so it can not learn another actuator
- Integrated latch version
  - Adjustable magnetic latch force 20…60N
  - Designed for easy mounting on aluminum profile

Type	Assured Sensing Distance	LED Door Indication/ Diagnostic	Actuator Code Type	Cat. No.		
				Cable		Connector
				3 m	10 m	8-pin Micro (M12)
18 mm plastic barrel/18 mm actuator	15 mm (0.59 in.)	Yes	Standard	**440N-Z21S16A**	440N-Z21S16B	**440N-Z21S16H**
			18 mm plastic	440N-Z21U16A	440N-Z21U16B	440N-Z21U16H
18 mm plastic barrel/30 mm actuator	25 mm (0.98 in.)	Yes	Standard	440N-Z21S26A	440N-Z21S26B	**440N-Z21S26H**
			30 mm plastic	440N-Z21U26A	440N-Z21U26B	440N-Z21U26H
18 mm stainless steel barrel/18 mm actuator	10 mm (0.39 in.)	Yes	Standard	**440N-Z21S17A**	440N-Z21S17B	**440N-Z21S17H**
			18 mm stainless steel	440N-Z21U17A	440N-Z21U17B	440N-Z21U17H
Plastic rectangular/rectangular actuator	18 mm (0.71 in.)	Yes	Standard	**440N-Z21SS2A**	440N-Z21SS2B	**440N-Z21SS2H**
			Unique	440N-Z21US2A	440N-Z21US2B	440N-Z21US2H
			Standard	**440N-Z21SS2AN**	440N-Z21SS2BN	**440N-Z21SS2HN**
			Unique	440N-Z21US2AN	440N-Z21US2BN	440N-Z21US2HN
			Standard	**440N-Z21SS2AN9**	440N-Z21SS2BN9	440N-Z21SS2HN9
			Unique	440N-Z21US2AN9	440N-Z21US2BN9	440N-Z21US2HN9
Plastic housing with integrated latch	Contact/ latched	Yes	Standard	440N-Z21SS3PA	440N-Z21SS3PB	440N-Z21SS3PH
			Unique	440N-Z21SU3PA	440N-Z21SU3PB	440N-Z21SU3PH

Connection Systems

Description	Cat. No.
Cordset	889D-F8AB-★
Patchcord	889D-F8ABDM-‡
Safety Wired T-Port	898D-438Y-D8
Safety Wired Shorting Plug	898D-418U-DM

★ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
‡ Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard lengths.

See publication S117-CA001… for complete product information.

Accessories 440N-Z

	Description	Cat. No.
	18 mm Plastic Actuator	**440N-Z18PT**
	30 mm Plastic Actuator	440N-Z30PT
	18 mm Stainless Steel Actuator	440N-Z18SST
	Rectangular plastic actuator	440N-ZPREC
	Standard model margin/magnetic hold	440N-ZPRECM
	Mountingbracket for tubular proximity sensors—right angle style	871A-BRS18
	Mounting bracket for tubular sensors—clamp style	871A-BP18
	Snap clamp mounting bracket	871A-SCBP18
	Swivel/tilt bracket allows ±10° vertical and 360° rotation adjustment	**60-2649**

440N-Z Magnetically Coded Non-Contact Switches

- Non-contact actuation
- Magnetic coded sensing
- LED indication for door status and troubleshooting
- SIL 3 (IEC 62061) and PLe (EN ISO 13849) can be achieved with suitable controller
- High tolerance to misalignment
- Designed for use with Allen-Bradley safety relays and controllers

Type	Operating Voltage/Input Current	Safety Outputs	Auxiliary Outputs	Status Indicator	Connection	Cat. No.
MC1	—	2 N.C. REEDS	—	No	8-Pin Micro (M12)	**440N-Z2NRS1C**
					3 m Cable	**440N-Z2NRS1A**
					10 m Cable	440N-Z2NRS1B
MC2	24V DC, +10%/-15%/50 mA max.	2 N.C. Solid-State Relays	1 x PNP, 0.2 A max.; Status: OFF (0V DC)	Yes	8-Pin Micro (M12)	440N-Z21W1PC
					3 m Cable	440N-Z21W1PA
					10 m Cable	440N-Z21W1PB

SAFETY

440N-S Sipha Coded Non Contact Interlock Switches

Features

- Choice of heads — multiple sensors can be connected to one controller
- Mechanical switches with 1 N.O. + 1 N.C. contacts can be included in the circuit
- Magnetically coded system
- Conform to EN 60947-5-1, EN 1088 (ISO 14119)
- Ideal for hygiene applications
- Controller doubles up as the safety relay

Approvals

- CE, cULus, TUV

Head Style		Cable Length	Auxiliary Contacts	Material	Cat. No.
	Safety Contacts 1 N.C. & 1 N.O.	3 m (9.8 ft)	None	ABS plastic	**440N-S32014**
		10 m (32.8 ft)	None	ABS plastic	**440N-S32016**
		3 m (9.8 ft)	1 N.C.	ABS plastic	**440N-S32022**
		10 m (32.8 ft)	1 N.C.	ABS plastic	**440N-S32032**
		3 m (9.8 ft)	1 N.O.	ABS plastic	440N-S32037
		10 m (32.8 ft)	1 N.O.	ABS plastic	440N-S32036
	Safety Contacts 1 N.C. & 1 N.O.	3 m (9.8 ft)	None	ABS plastic	**440N-S32015**
		10 m (32.8 ft)	None	ABS plastic	**440N-S32017**
		3 m (9.8 ft)	1 N.C.	ABS plastic	**440N-S32023**
		10 m (32.8 ft)	1 N.C.	ABS plastic	**440N-S32033**
		3 m (9.8 ft)	1 N.O.	ABS plastic	**440N-S32038**
		10 m (32.8 ft)	1 N.O.	ABS plastic	**440N-S32039**

Controllers

Type	Supply Voltage	Safety Outputs	Auxiliary Outputs	Case Size	Cat. No.
Control Unit 1	24V AC/DC	1 N.O.	1 N.C. Solid State	22.5 mm	**440N-S32013**
Control Unit 2	24V AC/DC 110/230V AC	2 N.O.	1 N.C.	45 mm	**440N-S32021**
Sipha 6		2 N.O. + 1 N.O. delayed	1 N.C.	90 mm	**440N-S32052**

See publication S117-CA001… for complete product information.

440K Tongue Operated Switches

Features
- Metal and Plastic Bodies
- GD2 offer stainless steel heads for demanding applications
- All complete with actuator

Approvals
- CE, cULus, TUV

Standards
- Conform to EN 1088 (ISO 14119), EN ISO 13849-1, EN 60947-1 and EN 60204-1

Model	Safety Contacts	Auxiliary Contacts	Housing Material	Conduit Entry	Comment	Cat. No.
Cadet 3	2 N.C.	1 N.O.	UL Approved glass-filled PBT	1 x M16	DIN 50047	**440K-C21061**
Cadet 3	3 N.C.	—	UL Approved glass-filled PBT	1 x M16	DIN 50047	**440K-C21097**
Trojan T15	1 N.C.	1 N.O.	UL Approved glass-filled PBT	3 x M20		**440K-T11305**
Trojan T15 Standard	2 N.C.	—	UL Approved glass-filled PBT	3 x M20		**440K-T11303**
Trojan 5 Standard	2 N.C.	1 N.O.	UL Approved glass-filled PBT	M20 conduit		**440K-T11090**
Trojan 5 GD2	2 N.C.	1 N.O.	UL Approved glass-filled PBT	3 x M20	GD2	**440K-T11336**
MT-GD2	2 N.C.	2 N.O.	UL Approved glass-filled PBT	1 x M20	DIN 50041	440K-MT55076
MT-GD2	3 N.C.	1 N.O.	UL Approved glass-filled PBT	1 x M20	DIN 50041	440K-MT55074

440G Guard Locking Safety Switches

Features

- Locks guard shut until open signal is given to interlock
- Conform to EN60947-5-1 and EN60204-1
- Metal and Plastic Bodies
- LED Status Indication

Approvals

- CE, cULus, TUV

Standards

- Conform to EN 1088 (ISO 14119), EN ISO 13849-1, EN 60947-1 and EN 60204-1

Holding Force	Supply Voltage	Material	Safety Contacts	Auxiliary Contacts	Model	Cat. No.
1600 N	24V AC/DC	Painted Zinc Alloy	3 N.C.	1 N.O.	440G-MT	**440G-MT47037**
1600 N	24V AC/DC	Painted Zinc Alloy	2 N.C.	2 N.O.	440G-MT	440G-MT47044
2000 N	24V AC/DC	UL Approved glass filled polyester	2 N.C.	1 N.O.	TLS-1 GD2 Power to Release	**440G-T27251**
2000 N	230V AC	UL Approved glass filled polyester	2 N.C.	1 N.O.	TLS-1 GD2 Power to Release	**440G-T27123**
2000 N	24V AC/DC	UL Approved glass filled polyester	2 N.C.	1 N.O.	TLS-2 GD2 Power to Lock	**440G-T27255**
2000 N	230V AC	UL Approved glass filled polyester	2 N.C.	1 N.O.	TLS-2 GD2 Power to Lock	**440G-T27129**
2000 N	24V AC/DC	UL Approved glass filled polyester	2 N.C.	1 N.O.	TLS-3 GD2 Power to Release	**440G-T27259**
5500 N	24V AC/DC	Die cast alloy	2 N.C.	1 N.O.	Standard	**440G-L07264**

See publication S117-CA001… for complete product information.

E-stops and Trip Devices (440E, 440J, 440P, 800F)

Bulletin	**440E**	**440J**	**440P**	**800FP**
Type	**Cable (Rope) Pull Switches**	**Enabling Switches**	**Safety Limit Switches**	**Emergency Stop Operators**
Features	• Switches up to 125m span • Switch lockout on cable pulled and cable slack • Cable-status indicator on switch lid • Unique cable grip system • Tensioner system	• Three position enabling switch • Lightweight and easy to use • Optional jog and e-stop functions • M20 conduit	• Large selection of actuator heads • Positive operation, forced disconnection of contacts • Snap-acting, slow make before break or slow break before make contacts • Selection of contact configurations	• Various shapes • IP2X finger-safe protection • Self-Monitoring Contact Blocks for safer operation • Illuminated, Non-Illuminated & Keyed Operators
Approvals	CE marked for all applicable directives and approved by cULus, BG and TUV where relevant	CE marked for all applicable directives and approved by cULus, BG where relevant	CE marked for all applicable directives and approved by cULus and TUV where relevant	CE marked for all applicable directives and approved by cULus, CCC and TUV where relevant
Standards	Conform to standards ISO 13850, EN ISO 12100, EN 60947-5-1	Conform to standards EN 60947-5-1, GS ET 22	Conform to EN 1088 (ISO 14119), EN 60947-5-1, EN ISO 12100 and EN 60204-1	Conform to standards ISO 13850, EN ISO 12100, EN 60947-5-1
Product Selection	**See page 5-9**	**See page 5-10**	**See page 5-11**	**See page 3-11 and page 3-21**

SAFETY

440E Lifeline 3 and 4 Cable (Rope) Pull Switches

Features

- Unique cable grip system
- Can be installed and commissioned in approximately 3 min.
- Up to 300 mm of cable adjustment
- Cable tidy incorporated into grippers
- Conform to ISO 13850, EN 60947-5-5 and EN ISO 12100
- Up to 125M cable span

System Length	Safety Contacts	Auxiliary Contacts	Model	Cat. No.
≤ 30 m	2 N.C.	2 N.O.	LRS3	**440E-D13118**
≤ 30 m	3 N.C.	1 N.O.	LRS3	**440E-D13112**
≤ 75 m	3 N.C.	2 N.O.	LRS4	**440E-L13137**
≤ 75 m	3 N.C.	1 N.O.	LRS4	**440E-L13042**
75…125 m	2 N.C.	2 N.O.	LRS4	**440E-L13153**
75…125 m	3 N.C.	1 N.O.	LRS4	440E-L13150

LRTS Installation Kits

Description	Length	Cat. No.
LRTS 10 meter Installation Kit - Comprises: 1 x length of cable (rope), 2 x grippers, 1 x tensioner and quantity of eyebolts.	10 m (32.8 ft)	**440E-A13080**
	20 m (65.6 ft)	**440E-A13082**
	30 m (98.4 ft)	**440E-A13083**
	50 m (164 ft)	**440E-A13084**
	75 m (246 ft)	**440E-A13085**

See publication S117-CA001… for complete product information.

440E Lifeline 4 Stainless Steel Cable (Rope) Pull Switches

Features

- Rugged, corrosion-resistant 316 stainless steel construction
- IP66/IP67 enclosure rating allows use in harsh environments
- Switches up to 75m cable span
- Lid mounted emergency stop button, designed to conform with ISO 13850

System Length	Safety Contacts	Auxiliary Contacts	Model	Conduit Entry	Cat. No.
≤ 75 m	2 N.C. direct opening action	2 N.O.	Lifeline 4 Stainless steel	3 x M20	**440E-L22BNSM**
≤ 75 m	2 N.C. direct opening action	2 N.O.	Lifeline 4 Stainless steel	Quick-Disconnect	440E-L22BNSL

Installation Kits

Description	Material	Length	Cat. No.
Lifeline 4 Stainless Steel Installation Kit -Comprises: 1 x length of cable (rope), 2 x grippers, 1 x tensioner and quantity of eyebolts.	Rope = Steel core with polypropylene sheath Thimble = Stainless steel 304 Rope Grips = Stainless steel 304 Tensioner = Stainless steel 316 Eyebolts = Stainless steel 304 Nuts and washers = Stainless steel	5 m	440E-A13194
		10 m	440E-A13195
		15 m	440E-A13196
		20 m	440E-A13197
		30 m	440E-A13198
		50 m	440E-A13199
		75 m	440E-A13200

440J Enabling Switches

Features

- Three position enabling switch
- Lightweight and easy to use
- Optional jog and e-stop functions
- M20 conduit

Description	Main contacts: 3 position switches	Monitoring Contacts	Jog Contacts	Emergency Stop Contacts	Conduit Entry	Cat. No.
Standard Switch (No additional buttons)	2 N.C.	1 N.C.	—	—	M20	**440J-N21TNPM**
Switch with Jog Button	2 N.C.	1 N.C.	1 N.O.	—	M20	**440J-N21TNPM-NP**
Switch with Emergency Stop Button	2 N.C.	—	—	2 N.C.	M20	440J-N2NTNPM-NE

Accessories

Description	Cat. No.
Silicone free rubber boot kit	440J-A10N
Mounting bracket suitable for single enabling switch ★	**440J-A00N**

★ The bracket has predrilled holes suitable for mounting either the MT-GD2, Trojan 5, or Trojan 6. Please note that the enabling switch, safety switch, and actuator are not supplied with the mounting bracket and are available separately.

SAFETY

440P Safety Limit Switches

Features

- Large selection of actuator heads
- Positive operation, forced disconnection of contacts
- IP66 enclosure protection
- Snap-acting, slow make before break or slow break before make contact blocks
- Contacts 1 N.C. + 1 N.O.; 2 N.C. + 1 N.O.; 3 N.C.; 2 N.C. + 1 N.O.;
- Conforms to EN 50047, EN 1088 (ISO14119), EN 60947-5-1, EN ISO 12100 and EN 60204-1

440P Senator in Plastic Housing — EN50047

Description		Safety Contacts	Auxiliary Contacts	Contact Type ★	Cat. No.
M20 Conduit Style	Roller Plunger	1 N.C.	1 N.O.	Snap Acting	**440P-CRPS11B**
	Roller Plunger	2 N.C.	1 N.O.	BBM	**440P-CRPB12B**
	Dome Plunger	1 N.C.	1 N.O.	Snap Acting	**440P-CDPS11B**
	Dome Plunger	2 N.C.	1 N.O.	BBM	440P-CDPB12B
	Short Lever	1 N.C.	1 N.O.	Snap Acting	**440P-CSLS11B**
	Short Lever	2 N.C.	1 N.O.	BBM	440P-CSLB12B
	Adjustable Lever	1 N.C.	1 N.O.	Snap Acting	**440P-CALS11B**
	Adjustable Lever	2 N.C.	1 N.O.	BBM	440P-CALB12B
QD Style	Short Lever	2 N.C.	1 N.O.	BBM	440P-CSLB12R6
Recommended Mating Cable for 1 N.C.+1 N.O. - 2 m					**889D-F4AC-2**
Recommended Mating Cable for 2 N.C.+1 N.O. - 2 m					889R-F6ACA-2

Other contact configurations and actuator types are available.
★ SA = Snap Acting contact operation. BBM = Break Before Make contact operation. MBB = Make Before Break contact operation.

440P Senator in Metal Housing — EN50041

Description		Safety Contacts	Auxiliary Contacts	Contact Type ★	Cat. No.
M20 Conduit Style	Roller Plunger	1 N.C.	1 N.O.	Snap Acting	**440P-MRPS11B**
	Roller Plunger	2 N.C.	2 N.O.	MBB	**440P-MRPB22B**
	Dome Plunger	1 N.C.	1 N.O.	Snap Acting	440P-MDPS11B
	Dome Plunger	2 N.C.	2 N.O.	MBB	440P-MDPB22B
	Short Lever	1 N.C.	1 N.O.	Snap Acting	**440P-MSLS11B**
	Short Lever	2 N.C.	2 N.O.	MBB	**440P-MSLB22B**
	Adjustable Lever	1 N.C.	1 N.O.	Snap Acting	**440P-MALS11B**
	Adjustable Lever	2 N.C.	2 N.O.	MBB	**440P-MALB22B**
Recommended Mating Cable for 1 N.C.+1 N.O. - 2 m					889N-F5AE-6F
Recommended Mating Cable for 2 N.C.+1 N.O. - 2 m					889M-F12X9AE-2

Other contact configurations and actuator types are available.
★ SA = Snap Acting contact operation. BBM = Break Before Make contact operation. MBB = Make Before Break contact operation.

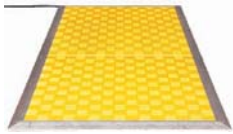
See publication S117-CA001… for complete product information.

Presence Sensing Safety Devices (440L, 445L, 442L, 440F)

Bulletin	**440L**	**440L**
Type	**GuardShield Safety Light Curtains** **POC** (**P**oint of **O**peration **C**ontrol)	**GuardShield Safe 4 Light Curtains** **PAC** (**P**erimeter **A**ccess **C**ontrol)
Features	• Type 4, 14 mm and 30 mm resolution • Type 2, 30 mm resolution • Scanning range 0.3…7 m / 14 mm resolution • Scanning range 0.3…16 m / 30 mm resolution • 20…1760 mm protected height in 160 mm increments • PNP outputs (2 N.O. Safety + 1 N.O. Non Safety)	• Type 4 • 400 mm beam spacing • 3 beam = 820 mm, 2 beam = 520 mm protection height • Scanning range 16 m • PNP outputs (2 N.O. Safety + 1 N.O. Non Safety)
Approvals	cULus, TÜV and CE Marked for all applicable directives	
Standards	Conform to relevant standards IEC/EN61496 parts 1 and 2	
Product Selection	**See page 5-14**	**See page 5-15**

Bulletin	**445L**	**445L**
Type	**GuardShield Safety Light Curtains** **POC** (**P**oint of **O**peration **C**ontrol)	**GuardShield Safe 4 Light Curtains** **PAC** (**P**erimeter **A**ccess **C**ontrol)
Features	• Safe 4, 14 mm and 30 mm resolution • Safe 2, 30 mm resolution • 120…1920 mm protected height in 120 mm increments • Scanning range 0…9 m / 14 mm resolution • Scanning range 0…18 m / 30 mm resolution • PNP outputs (2 N.O. Safety)	• Safe 4 • 400 mm and 500 mm beam spacing • 3 beam = 840 mm, 2 beam = 600 mm protection height • Scanning range 30 m • PNP outputs (2 N.O. Safety)
Approvals	CE marked for all applicable directives and approved by cULus and TUV where relevant	
Standards	Conform to relevant standards IEC/EN61496 Parts 1 and 2	
Product Selection	**See page 5-16**	**See page 5-17**

Presence Sensing Safety Devices (440L, 445L, 442L, 440F)

			
Bulletin	445L	442L	440F
Type	**GuardShield Micro 400 Safety Light Curtains** **POC** (**P**oint of **O**peration **C**ontrol)	**Safety Laser Scanner Safezone Singlezone / Multizone**	**Safety Mats**
Features	• Type 4, 14 mm and 30 mm resolution • 150 mm…1200 mm protected height in 150 mm increments • Scanning range / resolution 0…5 m / 14 mm, 0…5 m / 30 mm • Data output to MSR42, MSR42 Outputs: Two 400 mA OSSD	• Vertical or horizontal mounting in stationary or mobile applications • Auto configure safety field using ambient contour • Singlezone - 1 field set • Multzone - four switcheable field sets	• Category 3 device according to EN ISO 13849-1 • Hardened steel plate construction • Rugged construction withstands the pressure of 4500psi • No dead spots • IP67
Approvals	CE marked for all applicable directives and approved by cULus and TUV where relevant		
Standards	Conform to relevant standards IEC/EN61496 parts 1 and 2	Conform to relevant standards IEC/EN61496 part 3	EN1760-1, EN ISO 13849-1, IEC/EN60204-1
Product Selection	**See page 5-18**	**See page 5-20**	**See page 5-20**

440L GuardShield Safety Light Curtains, POC (Point of Operation Control)

Features

- Type 4 and Type 2 models
- PNP outputs (2 N.O safety + 1 N.O aux.)
- 14 mm or 30 mm object sensitivity
- Range: 0.3…7 m (14 mm resolution models),
  Range: 0.3…18 m (30 mm resolution models)
- Fixed blanking - teachable
- Beam coding
- External device monitoring (EDM)
- Start/restart interlock

Note: Cascadeable safety light curtains are also available, see publication S117-CA001…

GuardShield Type 4

Protected Height (mm)	Response Time	14 mm Resolution Cat. No.	30 mm Resolution Cat. No.
160	20 ms	440L-P4J0160YD	440L-P4K0160YD
320	20 ms	440L-P4J0320YD	440L-P4K0320YD
480	20 ms	440L-P4J0480YD	440L-P4K0480YD
640	20 ms	440L-P4J0640YD	440L-P4K0640YD
800	20 ms	**440L-P4J0800YD**	**440L-P4K0800YD**
960	20 ms	440L-P4J0960YD	440L-P4K0960YD
1120	20 ms	440L-P4J1120YD	440L-P4K1120YD
1280	20 ms	440L-P4J1280YD	440L-P4K1280YD
1440	20 ms	440L-P4J1440YD	440L-P4K1440YD
1600	25 ms	440L-P4J1600YD	440L-P4K1600YD
1760	25 ms	440L-P4J1760YD	440L-P4K1760YD
Transmitter Cable: 4 pin Straight, 5 m		**889D-F4AC-5**	
Receiver Cable: 8 pin Straight, 5 m		**889D-F8AB-5**	

GuardShield Type 2, 30 mm Resolution

Protected Height (mm)	Response Time	Restart	Cat. No.
160 mm	20 ms	Automatic	440L-P2KA0160YD
320 mm	20 ms		440L-P2KA0320YD
480 mm	20 ms		440L-P2KA0480YD
640 mm	20 ms		440L-P2KA0640YD
800 mm	20 ms		440L-P2KA0800YD
960 mm	20 ms		440L-P2KA0960YD
1120 mm	20 ms		440L-P2KA1120YD
1280 mm	20 ms		**440L-P2KA1280YD**
1440 mm	20 ms		440L-P2KA1440YD
1600 mm	25 ms		440L-P2KA1600YD
1760 mm	25 ms		440L-P2KA1760YD
Transmitter Cable: 4 pin Straight, 5 m			**889D-F4AC-5**
Receiver Cable: 8 pin Straight, 5 m			**889D-F8AB-5**

Note: Type 2 light curtains with built in manual reset and EDM are also available, see S117-CA001…

440L GuardShield Safety Light Curtains, PAC (Perimeter Access Control)

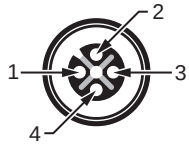
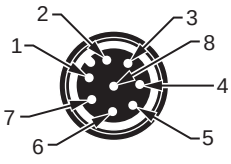
Features

- Type 4 models correspond to EN61496
- PNP outputs (2 N.O safety + 1 N.O aux.)
- Range: 0.4…16 m
- Beam coding
- External device monitoring (EDM)
- Start/restart interlock

GuardShield 3-beam PAC - Type 4, 400 mm Resolution

Protected Height (mm)	Response Time	Number of Beams	Restart	Cat. No.
520 mm	20 ms, 30 ms with beam coding activated	2	Automatic	440L-P4A2500YD
820 mm	20 ms, 30 ms with beam coding activated	3	Automatic	**440L-P4A3400YD**

Cordsets - Two Required (one for transmitter and one for receiver)

Female Connector (Sensor End)		Cable			
Face View of Female	Connector Style	Pin/Wire Color	Wire Rating	Length [m (ft)]	Cat. No.
Transmitter					
	Straight Female	1 Brown 2 White 3 Blue 4 Black	22 AWG 300V 4 A	2 (6.56)	**889D-F4AC-2**
				5 (16.4)	**889D-F4AC-5**
				10 (32.8)	**889D-F4AC-10**
				15 (49.2)	**889D-F4AC-15**
				20 (65.6)	**889D-F4AC-20**
				30 (98.4)	889D-F4AC-30
Receiver					
	Straight Female	1 White 2 Brown 3 Green 4 Yellow 5 Grey 6 Pink 7 Blue 8 Red	24 AWG 30V AC/36V DC 1.5 A	2 (6.56)	**889D-F8AB-2**
				5 (16.4)	**889D-F8AB-5**
				10 (32.8)	**889D-F8AB-10**
				15 (49.2)	**889D-F8AB-15**
				20 (65.6)	**889D-F8AB-20**
				30 (98.4)	889D-F8AB-30

See publication S117-CA001… for complete product information.

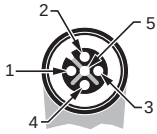
445L GuardShield Safe 4 Light curtains, POC (Point of Operation Control)

- 5 Pin M12 connectors
- Optically synchronized
- Integrated laser alignment system
- IP65 enclosure rating
- Simple installation
- cULus and CE Marked for all applicable directives

Protected Height [mm (in.)]	14 mm Resolution		30 mm Resolution	
	Number of Beams	Cat. No.	Number of Beams	Cat. No.
120 (4.7)	16	445L-P4L0120YD	8	445L-P4S0120YD
240 (9.4)	32	445L-P4L0240YD	16	445L-P4S0240YD
360 (14.2)	48	445L-P4L0360YD	24	445L-P4S0360YD
480 (19.9)	64	445L-P4L0480YD	32	445L-P4S0480YD
600 (23.6)	80	445L-P4L0600YD	40	445L-P4S0600YD
720 (28.3)	96	445L-P4L0720YD	48	445L-P4S0720YD
840 (33.1)	112	445L-P4L0840YD	56	445L-P4S0840YD
960 (37.8)	128	445L-P4L0960YD	64	445L-P4S0960YD
1080 (42.5)	144	445L-P4L1080YD	72	445L-P4S1080YD
1200 (47.2)	160	445L-P4L1200YD	80	445L-P4S1200YD
1320 (52.0)	176	445L-P4L1320YD	88	445L-P4S1320YD
1440 (56.7)	172	445L-P4L1440YD	86	445L-P4S1440YD
1560 (61.4)	188	445L-P4L1560YD	94	445L-P4S1560YD
1680 (66.1)	204	445L-P4L1680YD	102	445L-P4S1680YD
1800(70.9)	220	445L-P4L1800YD	110	445L-P4S1800YD
1920 (75.6)	236	445L-P4L1920YD	118	445L-P4S1920YD

Note: All products above are ordered as pairs (transmitter and receiver) and are shipped with mounting brackets.

Cordsets - Transmitters and receivers both use 5-pin M12 cordsets

Female Connector (Sensor End)		Cable			
Face View of Female	Connector Style	Pin/Wire Color	Wire Rating	Length [m (ft)]	Cat. No.
	Straight Female	1 Brown 2 White 3 Blue 4 Black 5 Grey	22 AWG 250V 4 A	2 (6.56)	**889D-F5AC-2**
				5 (16.4)	**889D-F5AC-5**
				10 (32.8)	**889D-F5AC-10**
				15 (49.2)	889D-F5AC-15
				20 (65.6)	889D-F5AC-20
				30 (98.4)	889D-F5AC-30
	Shielded Straight Female	1 Brown 2 White 3 Blue 4 Black 5 Grey	22 AWG 22 AWG 300V 4 A	2 (6.56)	889D-F5EC-2
				5 (16.4)	889D-F5EC-5
				10 (32.8)	889D-F5EC-10
				15 (49.2)	889D-F5EC-15
				20 (65.6)	889D-F5EC-20
				30 (98.4)	889D-F5EC-30

Note: Unshielded cordsets are most commonly used for safety light curtains, however, shielded cordsets are also offered to increase immunity to electrical interference.

445L GuardShield Safe 2 Light curtains, POC (Point of Operation Control)

- 5 Pin M12 connectors
- Optically synchronized
- Integrated laser alignment system
- IP65 enclosure rating
- Simple installation
- cULus and CE Marked for all applicable directives

Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Pair Weight [kg (lbs)]	Cat. No.
120 (4.7)	30 (1.18)	8	1.0 (2.2)	445L-P2S0120YD
240 (9.4)	30 (1.18)	16	1.4 (3.09)	445L-P2S0240YD
360 (14.2)	30 (1.18)	24	1.8 (3.97)	445L-P2S0360YD
480 (19.9)	30 (1.18)	32	2.2 (4.85)	445L-P2S0480YD
600 (23.6)	30 (1.18)	40	2.6 (5.73)	445L-P2S0600YD
720 (28.3)	30 (1.18)	48	3.0 (6.61)	445L-P2S0720YD
840 (33.1)	30 (1.18)	56	3.5 (7.72)	445L-P2S0840YD
960 (37.8)	30 (1.18)	64	4.0 (8.82)	445L-P2S0960YD
1080 (42.5)	30 (1.18)	72	4.0 (8.82)	445L-P2S1080YD
1200 (47.2)	30 (1.18)	80	4.5 (9.92)	445L-P2S1200YD
1320 (52.0)	30 (1.18)	88	5.0 (11.02)	445L-P2S1320YD
1440 (56.7)	30 (1.18)	86	5.5 (12.13)	445L-P2S1440YD
1560 (61.4)	30 (1.18)	94	6.0 (13.23)	445L-P2S1560YD
1680 (66.1)	30 (1.18)	102	6.5 (14.33)	445L-P2S1680YD
1800 (70.9)	30 (1.18)	110	7.0 (15.43)	445L-P2S1800YD
1920 (75.6)	30 (1.18)	118	7.5 (16.53)	445L-P2S1920YD

Note: All products above are ordered as pairs (transmitter and receiver) and are shipped with mounting brackets.

For selection of a cordset, see page 5-16

445L GuardShield™ Safe 4 Light Curtains, PAC (Perimeter Access Control)

- Integrated laser alignment system
- 2 segment and 3 segment systems
- 30 meter operating range
- Optically synchronized
- 5 Pin M12 connectors
- IP65 for a variety of application environments

Protected Height (mm)	Beam Spacing [mm]	Number of Beams	Cat. No.
600	500	2	445L-P4S2500YD
840	400	3	445L-P4S3400YD

For selection of a cordset, see page 5-16

MSR42 GuardShield Micro 400 Controller and Multi Function Safety Module

- Pigtail cable with M12 connector
- 3 box system with dedicated safety controller
- Offered in 14 mm and 30 mm resolutions
- Slim profi le housing (15 mm x 20 mm)
- 150 mm to 1200 mm protective heights, in 150 mm increments
- DIN controller is also multi function safety module
- Configuration of controller functionality through wiring or software
- Expansion safety relay modules (MSR45E) easily connect to controller
- Configuration of controller functionality through wiring or software
- SIL 3 per IEC 62061, PLe per EN13849-1
- IP54

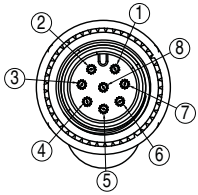
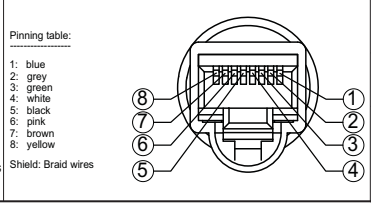
Note: Cascadeable safety light curtains are also available, see publication S117-CA001…

Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.	Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.
150 (5.9)	14 (0.55)	15	445L-P4C0150FP	150 (5.9)	30 (1.18)	6	445L-P4E0150FP
300 (11.8)	14 (0.55)	30	445L-P4C0300FP	300 (11.8)	30 (1.18)	12	445L-P4E0300FP
450 (17.7)	14 (0.55)	45	445L-P4C0450FP	450 (17.7)	30 (1.18)	18	445L-P4E0450FP
600 (23.6)	14 (0.55)	60	445L-P4C0600FP	600 (23.6)	30 (1.18)	24	445L-P4E0600FP
750 (29.5)	14 (0.55)	75	445L-P4C0750FP	750 (29.5)	30 (1.18)	30	445L-P4E0750FP
900 (35.4)	14 (0.55)	90	445L-P4C0900FP	900 (35.4)	30 (1.18)	36	445L-P4E0900FP
1050 (41.3)	14 (0.55)	105	445L-P4C1050FP	1050 (41.3)	30 (1.18)	42	445L-P4E1050FP
1200 (47.2)	14 (0.55)	120	445L-P4C1200FP	1200 (47.2)	30 (1.18)	48	445L-P4E1200FP

Micro 400 Controller - Required

Type	Mounting	Size	Cat. No.
MSR42	35 mm DIN Rail	22.5 mm	**440R-P226AGS-NNR**
MSR41			440R-P221AGS

Patchcords - Required (Transmitters and receivers both use 8-pin M12 to RJ45 patchcords)

Face View M12 Connector	Face View RJ45 Connector	Description	Cat. No.
		3 m patchcord, PVC jacket	**445L-AC8RJ3**
		5 m patchcord, M12 to RJ45	445L-AC8RJ5
		8 m patchcord, PVC jacket	445L-AC8RJ8

SAFETY

Optional Safety Relay Interfaces

	Input Voltage	Reset	Floating Blanking	Fixed Blanking	PSDI	Muting	Outputs	Cat. No.
MSR45E Safety Relay Expansion Model	Supplied by MSR41 or MSR42	Determined by MSR41 or MSR42	No	No	No	No	2 N.O.	440R-P4NANS

The MSR42 (MSR41) can have up to three MSR45E safety relays inter-connected. Each module requires a ribbon cable connector to make the interconnection. The table shows the cat. no. for each ribbon cable connector as well as the optical interface for the programming of the MSR42. Programming of the MSR42 is only necessary for advanced operating modes or connection of additional devices. Please note the MSR41 can connot be programmed for additional functionality.

Description		Cat. No.
	Ribbon cable—for one MSR45E	440R-ACABL1
	Ribbon cable—for two MSR45Es	440R-ACABL2
	Ribbon cable—for three MSR45Es	440R-ACABL3
	USB optical interface software configuration tool used to configure the MSR42	445L-AF6150

Optional Accessories

Description		Cat. No.
	Adjustable 180° bracket kit (two per kit) supplied with each pair Two kits required per pair	445L-AF6143
	Flat bracket kit (two per kit) Two kits per pair	445L-AF6145

SAFETY

442L Safezone Laser Scanner

Features

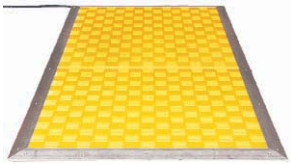
- Vertical or horizontal mounting in stationary or mobile applications
- Safety category 3 per IEC 61496 and SIL2 per IEC61508
- Auto configure safety field using ambient contour
- Singlezone - one field set
- Multzone - four switcheable field sets

Model	Application Specific Resolutions	Safety Outputs	Auxiallary Outputs	Angular Scanning Range	Safety Field Range	Cat. No.
SafeZone Single Zone	30, 40, 50, 70 and 150 mm	2 PNP	1	190°	4 m	**442L-SFZNSZ**
SafeZone Multizone	30, 40, 50, 70 and 150 mm	2 PNP	1	190°	5 m	**442L-SFZNMZ**

Accessories

Description	Cat. No.
Prewired I/O connector cable, 10M	**442L-CSFZNMZ-10**
Prewired I/O connector cable, 20M	442L-CSFZNMZ-20
RS232 Programming Cable	442L-ACRS232
Mounting Kit 1: Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility	442L-AMBSFZNMZ1
Mounting Kit 2: Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible	442L-AMBSFZNMZ2
Mounting Kit 3: Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible	442L-AMBSFZNMZ3
24V DC, 3.0 Amp power supply	**1606-XLP72E**

440F MatGuard Safety Mats



Category 3 according to EN ISO 13849-1

- Third party certification to EN 1760-1
- Overall sensitivity including uniting strip
- Rugged construction withstands the pressure of 4500psi
- IP 67 vinyl construction resistant to most oils
- 5-year warranty
- Mat manager monitors the status of up to 8 mats individually

Mat Size [mm (in.)]	Cat. No.
500 x 500 (19.7 x 19.7)	440F-M1010BYNN
500 x 1500 (19.7 x 59.1)	440F-M1030BYNN
750 x 1500 (29.5 x 59.1)	**440F-M1530BYNN**
1000 x 1000 (39.4 x 39.4)	**440F-M2020BYNN**
1000 x 1250 (39.4 x 49.2)	440F-M2025BYNN
1000 x 1500 (39.4 x 59.1)	**440F-M2030BYNN**

Safety Relays and Controllers (440R, 1752)

Bulletin	440R	440R	440R
Type	**Next Generation** Guardmaster safety relays	**MSR100** Dedicated Safety Relays	**MSR30** Dedicated Safety Relays with Solid State Outputs
Features	• Designed to meet the new functional safety standards, the range monitors a broad range of input devices, and a full range of reset functions can be selected via a rotary switch. • A single wire safety connection allows simple AND/OR Logic to be achieved	• Monitors multiple inputs in one base controller e.g. interlocks, light curtains, safety mats	• Microprocessor core and solid state outputs guarantee a long life • Ideal for applications with high switching frequencies • Allows to be connected to gate interlocks, e-stop devices and four-wire safety mats.
Approvals	CE marked for all applicable directives and approved by UL, C-Tick, and TÜV where relevant		
Standards	Conform to EN ISO 13849-1, EN IEC 62061	Conform to EN ISO 13849-1, EN 62061, EN 60204-1	Conform to EN ISO 13849-1, EN62061, EN 60204-1
Product Selection	**See page 5-22**	**See page 5-23**	**See page 5-25**

Bulletin	440R-S	440R	1752
Type	**MSR57P** Safe Speed and Standstill Monitoring Safety Relays	**MSR 200/300** Modular types	SmartGuard Programmable Controller
Features	• Designed to solve motion applications which require interaction by personnel during operation. • Connects to any drive and monitors the speed using currently installed encoders.	• Modular concept allows to wire multiple devices on individual inputs thus achieving the highest safety ratings • Interconnecting system offers input units, output units, controller and display module • Zoning and basic logic functions supported	• Programmable safety controller allows for more advanced safety functionality • 16 safety-rated inputs, 8 safety-rated outputs and 4 pulse test sources on board • Expendable via DeviceNet Safety I/O's
Approvals	CE marked for all applicable directives and approved by UL, C-Tick, and TÜV where relevant		
Standards	Conform to EN ISO 13849-1, EN 60204-1, EN IEC 62061	Conform to EN ISO 13849-1, EN 60204-1	Conform to EN ISO 13849-1, IEC 61508
Product Selection	**See page 5-26**	**See page 5-27**	**See page 5-28**

Safety Monitoring Relays

- A broad range of safety functions
- Versatility through simple logic, reset and timing configurations
- Single wire safety relay connection allows for ease of installation and system flexibility
- Terminals are grouped together for power, inputs and outputs for clear connection
- Compact solution saves energy and space on DIN rail
- Consistent terminal layouts and configuration allow simplified installation

The new family of Allen-Bradley Guardmaster Safety Relays from Rockwell Automation includes six units capable of monitoring a broad range of safety devices in a variety of applications. These six units can achieve most of the functions safety systems require, helping simplify purchasing and parts management. The family is designed to meet new functional safety standards, such as EN / ISO 13849-1 or EN / IEC 62061 and offers key functions to simplify installation and system complexity.

Inputs	No. of Inputs	Safety Outputs	Auxiliary Outputs	Supply Voltage	Model	Cat. No.
Single, Dual Channel, N.C., Solid State, Safety Mats	2 dual channel	2 N.O.	1 S.S.	24V DC	DI	440R-D22R2
		2 S.S.			DIS	440R-D22S2
Single, Dual Channel, N.C., Solid State, Safety Mats	1	2 N.O.	1 S.S.	24V DC	SI	440R-S12R2
		3 N.O.	1 N.C.		CI	440R-S13R2
Expansion Module	—	4 N.O.	1 S.S.	24V DC	EM	440R-EM4R2
		4 (0…300 s off delay)			EMD	440R-EM4R2D

See publication S117-CA001… for complete product information.

MSR100 Dedicated Safety Relays

- Conform to EN ISO 13849-1, EN 62061 and EN 60204-1
- Stop category 0
- Cross fault monitoring
- Monitored or automatic reset
- Removable or fixed terminals

Stop Category 0 Relays

Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Supply Voltage	Model	Cat. No.
1 N.C.	3 N.O.	1 N.C.	Fixed	24V AC/DC	MSR117T	**440R-B23211**
Light Curtain or Single Channel (MSR126T)	2 N.O.	None	Fixed	24V AC/DC	MSR126T	**440R-N23117**
				230V AC	MSR126T	**440R-N23115**
				24V AC/DC	MSR126R	**440R-N23123**
				230V AC	MSR126R	440R-N23121
Dual Channel 2 N.C. (MSR126.IT)	2 N.O.	None	Fixed	24V AC/DC	MSR126.IT	**440R-N23114**
				230V AC	MSR126.IT	**440R-N23112**
				24V AC/DC	MSR126.IR	**440R-N23120**
				230V AC	MSR126.IR	440R-N23118
1 N.C., 2 N.C., Light Curtain	3 N.O.	1 N.C.	Fixed	24V AC/DC	MSR127T	**440R-N23126**
				230V AC	MSR127T	**440R-N23124**
				24V AC/DC	MSR127R	**440R-N23129**
				230V AC	MSR127R	440R-N23127
			Removable (Screw)	24V AC/DC	MSR127TP	**440R-N23132**
				230V AC	MSR127TP	**440R-N23130**
				24V AC/DC	MSR127RP	**440R-N23135**
				230V AC	MSR127RP	**440R-N23133**
1 N.C., 2 N.C., Light Curtain, Safety Mat	7 N.O.	4 N.C., 2 PNP, solid state	Removable	24V AC/DC	MSR142RTP	**440R-G23216**
				230V AC	MSR142RTP	440R-G23214
1 N.C., 2 N.C., Light Curtain, Safety Mat	3 N.O.	2 N.C., 2 PNP solid state	Removable (Screw)	24V AC/DC	MSR131RTP	**440R-C23139**
				230V AC	MSR131RTP	440R-C23136

See publication S117-CA001… for complete product information.

SAFETY

MSR100 Dedicated Safety Relays with Delayed Outputs

- Conform to EN ISO 13849-1, EN 62061 and EN 60204-1
- Stop category 0 and 1
- Light curtain, E-stop, safety gate inputs
- Two immediate safety outputs
- Delayed outputs: 3 N.O. safety or 2 N.C. safety and 1 N.C. aux.
- Cross fault monitoring
- Monitored or automatic reset
- Removable terminals

Stop Category 1 Relays

Safety Inputs	Instant Safety Outputs	Delayed Safety Outputs	Time Range	Supply Voltage	Model	Cat. No.
1 N.C., 2 N.C. or Light Curtain	2 N.O.	3 N.O.	0.15…3 s	24V AC/DC	MSR138DP	**440R-M23143**
				230V AC	MSR138DP	440R-M23140
			0.5…10 s	24V AC/DC	MSR138DP	**440R-M23147**
				230V AC	MSR138DP	440R-M23144
			1.5…30 seconds	24V AC/DC	MSR138DP	**440R-M23151**
				230V AC	MSR138DP	440R-M23148
		2 N.O.	0.15…3 seconds	24V AC/DC	MSR138.1DP	**440R-M23084**
				230V AC	MSR138.1DP	440R-M23081
			0.5…10 seconds	24V AC/DC	MSR138.1DP	**440R-M23088**
				230V AC	MSR138.1DP	440R-M23085
			1.5…30 seconds	24V AC/DC	MSR138.1DP	**440R-M23092**
				230V AC	MSR138.1DP	440R-M23089

22.5 mm wide Output expander unit for use with Safety Relays

Safety Inputs	Safety Outputs	Auxiliary Outputs	Time Delay	Terminals	Supply Voltage	Model	Cat. No.
1 N.C. or 2 N.C.	4 N.O.	2 N.C.	0 s	Fixed	24V AC/DC	MSR132E	**440R-E23191**
			0.5 s		24V DC	MSR132ED	440R-E23192
			1 s			MSR132ED	440R-E23193
			2 s			MSR132ED	440R-E23194
			3 s			MSR132ED	440R-E23195
			0 s	Removable	24V AC/DC	MSR132EP	**440R-E23097**
			0.5 s		24V DC	MSR132EDP	440R-E23159
			1 s			MSR132EDP	440R-E23160
			2 s			MSR132EDP	440R-E23098
			3 s			MSR132EDP	440R-E23161
			4 s			MSR132EDP	440R-E23162

See publication S117-CA001… for complete product information.

MSR125H/HP Logic unit for monitoring and interfacing two-hand control devices

- Conform to EN ISO 13849-1 and EN 60204-1
- Safety category IIIC per EN 574
- Two-hand control unit
- Two N.O. safety outputs
- Removable or fixed terminals
- 22.5 mm wide housing

Input Buttons	Safety Outputs	Terminals	Model	Supply Voltage	Cat. No.
Mechanical	2 N.O.	Fixed	MSR125H	24V DC	**440R-D23166**
				230V AC	440R-D23163
		Removable	MSR125HP	24V DC	**440R-D23171**
				230V AC	440R-D23168

MSR30 Dedicated Safety Relays with Solid State Outputs

- Conform to EN ISO 13849-1, EN 62061 and EN 60204-1
- Stop category 0
- Removable or fixed terminals
- Two solid-state safety outputs
- One solid-state auxiliary output
- One N.C., two N.C or safety mat input
- 24V DC Supply
- Monitored manual or automatic/manual reset

Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Model	Cat. No.
1 N.C., 2 N.C.	2 N.O. Solid State	1 N.O. Solid State	Fixed	MSR30RT	440R-N23197
1 N.C., 2 N.C.	2 N.O. Solid State	1 N.O. Solid State	Removable	MSR30RTP	440R-N23198
1 N.C. & 1 N.O.	2 N.O. Solid State	1 N.O. Solid State	Fixed	MSR33RT	440R-F23199
1 N.C. & 1 N.O.	2 N.O. Solid State	1 N.O.	Removable	MSR33RTP	440R-F23200
2 x 1 N.C. + 1 N.O. (Two-Hand Control) or 2 x N.O.	2 N.O. Solid State Safety; 1 N.O. Solid State Auxiliary	1 N.O. Solid State	Fixed	MSR35H	440R-D23201
Two-Hand Control	2 N.O. Solid State	1 N.O. Solid State	Removable	MSR35HP	440R-D23202
1 N.C., 2 N.C., Safety Mat	2 N.O. Solid State ★	1 N.O. Solid State	Fixed	MSR38D	440R-M23203
1 N.C. or 2 N.C. or SM	2 N.O. Solid State ★	1 N.C. Solid State	Removable	MSR38DP	440R-M23204

★ Time delay 0.5…300 seconds in 24 steps

SAFETY

MSR57P Safe Speed and Standstill Monitoring Safety Relays

- Conform to EN ISO 13849-1, EN 60204-1 and EN IEC 62061
- SIL CL3 per EN IEC 62061, PLe per ISO 13849-1
- Stop categories 0, 1, 2
- Wide variety of on-board safe speed control functions
- Supports up to 2 encoders (sin/cos and TTL)
- 6 N.O. solid-state safety outputs
- 4 solid-state auxiliary outputs
- 8 diagnostic LEDs
- DPI configuration port
- 67.5 mm DIN Rail housing
- Removable terminals

Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
5 x 1 N.C., 2 N.C., LC, 1 N.O. + 1 N.C.	6 N.O. solid state	4 N.O. solid state	Removable	Auto./Manual or Manual Monitored	24V DC	**440R-S845AER-NNL**

Accessories

Description	Cat. No.
MSR57 Encoder cable with flying leads (2.5 meters)	1585J-M8RB-2M5
3 meter cable HIM	1202-C30
1 meter cable HIM	1202-C10
AnaCANda serial converter (RS232)	1203-SSS
AnaCANda USB converter	1203-USB
HIM full numeric LCD IP20 (NEMA 1)	20-HIM-A3
Kinetix 6000/7000 low profile connector kit	2090-K6CK-Dxxx
Kinetix 2000 low profile connector kit	2090-K2CK-D15M
HIM to MSR 57 cable (1 meter)	20-HIM-H10
Sin/Cos encoder (1024 PPR)	842HR-xJxxx15FWY2
TTL encoder (size 20)	845T-xxxxxxx
TTL encoder (size 25)	845H-SJxxx4xxYxx

See publication S117-CA001… for complete product information.

MSR200 Series: Modular Safety Relay System with Communications

- Conform to EN ISO 13849-1, EN 62061 and EN 60204-1
- Stop category 0
- Pulsed input monitoring
- Two input circuits: safety gate, E-stop or safety mat
- Up to 22 diverse input devices
- Two safety outputs, three auxiliary outputs
- Ten diagnostic LEDs
- Removable terminals

Type	Application	Description	Inputs	Safety Outputs	Auxiliary Outputs	Supply Voltage	Cat. No.
MSR210P	GT, ES, SM	Base module	2	2	3	24V DC	**440R-H23176**
MSR211P	GT, ES, LC						**440R-H23177**
MSR220P	GT, ES, SM	Input extension module	2	—	—	24V DC	**440R-H23178**
MSR221P	GT, ES, LC						440R-H23179
MSR230P	—	Output extension module	—	4	—	24V DC	**440R-H23180**
MSR238P	—			2	1★		**440R-H23196**
MSR240P	—	RS232 interface	—	—	—	24V DC	440R-H23181
MSR240P	—	RS485 interface					440R-H23182
MSR240P	—	RS232 + RS485 interface					440R-H23183
MSR241P	—	DeviceNet Interface	—	—	—	24V DC	440R-H23187
MSR241P	—	Profibus Interface	—	—	—	24V DC	440R-H23186
MSR245P	—	Display module	—	—	—	24V DC	440R-H23184

★ Delayed output: 0 to 300 sec

Model Key: GT = Gate, ES = E-Stop, SM = Safety Mat, LC = Light Curtain

See publication S117-CA001… for complete product information.

SAFETY

MSR300 Series: Modular Safety Relay System with Logic Control

- Conform to EN ISO 13849-1 and IEC 61508
- SIL3 per IEC 61508
- EN 574 Type IIIC
- Stop category 0 and 1
- Pulsed input monitoring
- Three auxiliary group outputs
- Six diagnostic LEDs
- Manual, monitored or automatic reset
- Zone control—up to three
- RS232 Diagnostic Comms
- Unidirectional RS232, 4800 baud
- Bidirectional RS232, 2400, 4800, 9600, 19200 baud
- Removable terminals

Type	Appli-cation	Description	Inputs	Safety Outputs	Auxiliary Outputs	Supply Voltage	Group No.	Cat. No.
MSR310P	—	Safety Relay Base Unit	—	MSR300 Series Output Modules	3 PNP Solid State	24V DC	—	**440R-W23219**
MSR320P	GT, ES, SM, LC	Safety Relay input expansion module	3	—	2 PNP Solid State	24V DC from the base unit	—	**440R-W23218**
MSR329P	ML	Muting Lamp module	—	—	—	24V DC from the base unit	—	440R-W23217
MSR330P	—	Safety Relay output expansion module	—	3 N.O.	1 N.C.	24V DC	1	**440R-W23221**
MSR330P	—	Safety Relay output expansion module	—	3 N.O.	1 N.C.	24V DC	2	**440R-W23222**
MSR330P	—	Safety Relay output expansion module	—	3 N.O.	1 N.C.	24V DC	3	**440R-W23223**
MSR338DP	—	Off-Delay Output	—	3 N.O.	1 N.C.	24V DC from the base unit	1	440R-W23224
MSR338DP	—		—				2	440R-W23225
MSR338DP	—		—				3	440R-W23226

Model Key: GT = Gate, ES = E-Stop, SM = Safety Mat, LC = Light Curtain, ML = Muting Lamp

1752 SmartGuard Programmable Controller

- Small Safety Controller
- 16 In / 8 Out / 4 Pulse Test Sources
- Up to 32 connections (DIO blocks) on DeviceNet Safety
- Configured and programmed via RSNetWorx
- Certified SIL 3, Category 4 per EN ISO 13849-1, UL NRGF, UL Class I Div 2

Description	Number of Digital Inputs	Number of Digital Outputs	Cat. No.
SmartGuard 600 Safety Controller	16	8	**1752-L24BBB**

Safety Enabled Actuators (100S-C, 100S-D, 22D)

Bulletin	**100S-C**	**100S-D**	**22D**
Type	**Safety Contactor**	**Safety Contactor**	**PowerFlex 40P and 70 with Safe-off Option**
Features	• Positively Guided/Mechanically Linked Auxiliary Contacts • Front-Mounted Auxiliary Contacts: - Permanently Fixed - Protective Cover to Prevent Manual Operation - Red Contact Housing for Easy Identification • Incorporates IEC 947-5-1 "Mechanically Linked" Symbol • AC or DC coil control • SUVA Third-Party Certification	• Positively Guided/Mechanically Linked Auxiliary Contacts which are required in feedback circuit for modern safety applications. • The Positively Guided N.C. Auxiliary Contacts will not change the state when a power contact welds.	• Safe-off function conforming to EN ISO 13849-1 Cat. 3 • Available for all PowerFlex 40P drives from 0.37 to 11 kW
Approvals	CE Marked, CSA Certified (Cert No. LR13908), UL Listed (File No. E3125; Guide No. NLDX), SUVA Third-Party Certified	CE Marked, CSA Certified, UL Listed, SUVA Third-Party Certified	UL, CE, CSA, C-Tick
Standards	EN 50205, UL 508, CSA C22.2 No. 14, IEC/EN 60947-4; IEC 60947-4-1, Annex H — Mirror Contacts, IEC 60947-5-1, Annex L — Mechanically Linked Contacts	IEC 60947-4-1 / A1: 2002-09, Annex F, CSA C22.2 No. 14, UL 508	EN ISO 13849-1
Product Selection	**See page 1-32**	**See page 1-40**	**See page 1-90, 1-94**

SAFETY

Notes

TABLE OF CONTENTS

Phototelectric Sensors **6-2**

Inductive Proximity Sensors **6-24**

Capacitive Proximity Sensors **6-32**

Ultrasonic Sensors **6-33**

Condition Sensing Switches **6-35**

Limit Swiches, see page **5-11**

Photoelectric Sensors (42EF RightSight, 42CA, 42CM, 42CS)

Bulletin	**42EF RightSight**	**42CA**	**42CM**	**42CS**
Type	Photoelectric Sensors	Cylindrical M18 Photoelectric Sensors	Metal Cylindrical M18 Photoelectric Sensors	Cylindrical M18
Features	• Wide selection of sensing modes • Popular housing allows through hole mounting as well as M18 threaded mounting hubs • Heavy duty and food applications • Clear object detection model available • Long range laser class I version	• Wide selection of sensing modes • Popular cylindrical Plastic M18 housing	• Wide selection of sensing modes • Popular cylindrical Metal M18 housing • Heavy duty industrial applications	• Smooth Barrel Design for Food & Beverage Industry • Stainless Steel 316L Housing • IP69K + ECOLAB • Extended Temperature Range
Sensitivity Adjustment	Manual / Teach	Manual	Manual	Ferromagnetic Teach
Response Time	1…4 ms	0.5 - 1 ms	0.5…2 ms	1 ms
Sensing Range				
Diffuse Reflection	3…500 mm	100, 400, 1000 mm	0…100 / 400 mm	100, 400, 800 mm
Retroreflective	25 mm…4.5 m	4.8 m, 7.2 m	3 mm…4 m	—
Polarized Retroreflective	25 mm…3 m / 15 m	3.8 m	3 mm…3 m	up to 4 m
Transmitted Beam	4, 8, 20, 40 m	16 m	3 mm…14 m	up to 20 m
Background Supp.	0…50 mm / 100 mm	50 mm, 100 mm	0…50 / 100 mm	60 - 100 mm
Fixed Focus	43 mm	—	—	—
Sharp Cutoff	3…130 mm	—	—	—
Clear Object	—	—	—	up to 1 m
Output Mode	Dual NPN and PNP PNP complementary LO/DO Light On or Dark On (by model number)	PNP and PNP/NPN complementary LO/DO Light On or Dark On (by model number)	PNP LO and DO selectable	PNP/NPN
Connection	Cable, Micro / M12 Connector	Micro / M12 Connector	Cable, Micro / M12 Connector	Micro / M12
Supply Voltage	10…30V DC	10…30V DC	10…30V DC	10…30V DC
Enclosure Rating				
IP	IP 54	IP 67	IP 67	IP 69K + ECOLAB
NEMA	NEMA 4X, 6P	—	—	—
Special enclosure	1200 psi / 82.7 bar washdown rating	—	—	—
Approvals	UL, CSA, CE	c-UL, CE	c-UL, CE	cULus, CE
Product Selection	**See page 6-7**	**See page 6-10**	**See page 6-11**	**See page 6-12**
Accessories	**See page 6-20**	**See page 6-20**	**See page 6-20**	**See page 6-20**

Photoelectric Sensors (42JS)

Bulletin	42JS
Type	**20 mm Miniature Rectangular**
Features	• Visible light source offered on all models for ease of alignment • Optional snap-on adaptor enables 18 mm mount and makes sensor replacement a snap • Patented ASIC design offers linear sensitivity adjustment, stability indication, and excellent noise immunity • Compact sealed housing and cavity free design to minimize collection of dust and debris while allowing for easy sensor cleanup • Threaded metal M12 or M8 connector on pigtail • 360° visible LED status indicators • Additional transmitted beam models available with infrared light source for superior cross talk immunity • Input to disable light source on transmitted beam emitter
Optical	
Sensing Modes	Polarized retroreflective, diffuse, transmitted beam
Light Source	Visible red LED (660 nm) or infrared LED (880 nm)
Adjustments	Sensitivity potentiometer or fixed by cat. no.
Electrical	
Voltage	10…30V DC
Current Consumption	25 mA max
Sensor Protection	Short circuit, overload, false pulse, transient noise, reverse polarity
Outputs	
Response Time	1 ms
Output Mode	PNP or NPN (by cat. no.)
Output Type	Complementary light or dark operate
Output Current	100 mA
Output Leakage Current	10 μA max
Mechanical	
Housing Material	ABS
Connection Types	2 m cable, 4-pin DC micro (M12) QD, 4-pin pico (M8) QD
Supplied Accessories	Mounting hardware (M3 x 25) stainless steel screws
Operating Temperature [C (F)]	-20…+60° (-4…+140°)
Operating Environment	IP 67
Approvals	cULus and CE Marked for all applicable directives
Product Selection	**Page 6-9**

Photoelectric Sensors (44B, 42BT, 42G 9000 Series)

Bulletin	**44B**	**42BT**	**42G (9000 Series)**
Type	Background and Foreground Suppression Sensors	Long Range Background Suppression Sensors	Photoelectric Sensors Standard and Timing
Features	• Adjustable BGS/FGS • Popular square housing allows through hole mounting • High impact acrylic housing design for rugged food industry	• Adjustable BGS • Popular square housing allows through hole mounting	• Long sensing range • Heavy duty industrial applications • Clear object detection model available • On/Off Delay, One Shot Timer
Sensitivity Adjustment	Manual	Manual	Manual
Response Time	1 ms	2 ms	2 ms
Sensing Range			
Diffuse Reflection	—	—	50.8…4.6 m
Retroreflective	—	—	50.8…9.1 m
Polarized Retroreflective	—	—	50.8…4.8 m
Transmitted Beam	—	—	25.4…152 m
Background Suppression	20…300 mm	0.2…2 m	—
Foreground Suppression	20…200 mm	—	—
Output Mode	Dual NPN and PNP Light On or Dark On (by model number)	Dual NPN and PNP LO and DO selectable	Dual NPN and PNP LO and DO selectable
Connection	Micro / M12 Connector	Cable Pico / M8 Connector	Cable Micro / M12 Connector
Supply Voltage	10…30V DC	10…30V DC	10…40V DC
Enclosure Rating			
IP	IP 67	IP 50	IP 67
NEMA	NEMA 3,4X, 6P, 12, 13	NEMA 1	NEMA 3, 4X, 6P, 12, 13
Special enclosure	—	—	1200 psi / 82.7 bar washdown rating
Approvals	UL, c-UL, CE	UL, c-UL, CE	UL, CSA, CE
Product Selection	**See page 6-13**	**See page 6-13**	**See page 6-14**
Accessories	**See page 6-20**	**See page 6-20**	**See page 6-20**

Photoelectric Sensors (45BPD, 45CPD, 45CLR)

Bulletin	**45BPD**	**45CPD**	**45CLR**	**Photoelectric Accessories**
Type	Precise Laser Distance Measurement Sensor	Long Range Laser Distance Measurement Sensor	ColorSight Color / Contrast Sensors	Mounting Brackets
Features	• Analog and discrete outputs • CCD technology • Laser Class II	• Analog and discrete outputs • Time of flight • Laser Class I & II	• Three channel color matching (3 outputs) • Wiide sensing range tolerance (±6 mm (±0.24 in.)) • Adjustable tolerance for high precision general color matching • External teach capability • Compact size enclosure • RS--485 communication models available	• Wide variety of metal and plastic mounting brackets • Large selection of reflectors • Vertical / horizontal alignment brackets
Applications	—	—	Precise color match sensing Part inspection and sortation	—
Sensitivity Adjustment	Teach	Teach	—	—
Response Time	0.4 ms	13…30 ms	1 ms	—
Sensing Range				
Diffuse Reflection	30…100 mm 80…300 mm	200…6000 mm	12…32 mm (0.47…1.26 in.)	—
Output Mode	PNP LO and DO selectable Analog 4…20 mA	PNP LO and DO selectable Analog 4…20 mA	3 PNP outputs (discrete models) RS485 models: 1 PNP or 1 NPN output by cat. no.	—
Connection	Micro M12 Connector	Micro M12 Connector	Micro QD	—
Supply Voltage	10…30V DC	10…30V DC	12…30V DC	—
Enclosure Rating	IP 67	IP 67	ABS/PMMA, IP 67	—
Approvals	UL, cULus, CE	UL, cULus, CE	cULus, CE	—
Product Selection	**See page 6-15**	**See page 6-16**	**See page 6-16**	
Accessories	**See page 6-20**	**See page 6-20**	**See page 6-20**	**See page 6-20**

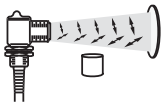
Photoelectric Sensors (45PVA, 45AST, 45MLA, 45DLA)

Bulletin	**45PVA**	**45AST**	**45MLA**	**45DLA**
Type	Slim Type Picking Sensors	Area Arrays	Measuring Light Arrays	Discrete Light Arrays
Features	• 35 mm object resolution • Robust aluminum enclosure • Four heights to choose from • Highly visible JOB and FAULT indicators • Crosstalk immunity • Low voltage DC operation	• Two-dimensional array scanning technology • 11…17 mm resolution • 50, 100, 150 mm scanning height models • Durable aluminum housing • Bracket-free mounting • Low voltage DC operation	• Hight Measuring Capability • Slim Profile Housing • Long Operating Range • Individual Beam Status • Zone Control Function • Communication Interfaces	• Integrated Controller • Slim Profile Housing • Long Operating Range • Optically Synchronized • Wiring Selectable Range • Push - Pull Outputs
Applications	Error proofing Bin picking	Small parts assembly Parts ejection sensing	Hight Measuring, Sorting, Palletizer Applications	Presence, Parts Counting, Palletizer Applications
Ligjt Type	—	—	Infrared LED 940 nm	Infrared LED 880 nm
Sensing Specification				
Sensing Range	Transmitted Beam 2 m (6.5 ft)	Transmitted beam up to 2.5 m (8 ft)	0…4 m	200…1500 mm or 1…8 m
Measurement / Detecting Range	—	—	300…2500 mm	118…734 mm
Resolution	—	—	10 and 25 mm	30 mm
Output Mode				
Digital I/O	NPN or PNP 50 mA	NPN or PNP 100 mA	PNP/NPN (Push-Pull)	PNP/NPN (Push-Pull)
Interface	—	—	RS485 or CAN	—
Analog	—	—	0…10 or 4…20 mA	—
Response Time	25…98 ms	4…8ms	—	—
Connections	300V PVC cable with micro QD	300V PVC cable 2 m	Micro M12 (8-Pin)	Micro M12 (4-Pin)
Operating Voltage	12…24V DC	12…24V DC	24V DC	14…30V DC
Enclosure	Aluminum housing, acrylic window, IP 62	Aluminum housing, acrylic window, IP 67	IP 54	IP 54
Approvals	cULus, CE	cULus, CE	cULus, CE	cULus, CE
Accessories				
Easy Adjustment Bracket (Swivel, Tilt)	—	—	Flat mounting kit 445L-AF6145, 180° adjustable mounting kit 445L-AF6143	—
Cables	—	—	445L-AC8RJ3, 445L-AC8RJ5, 445L-AC8RJ8	889D-F4AC-2, Splitter 879D-F4DM
Product Selection	**See page 6-17**	**See page 6-17**	**See page 6-18**	**See page 6-19**
Accessories	**See page 6-20**	**See page 6-20**	**See page 6-20**	**See page 6-20**

Photoelectric Sensors—RightSight

- Flexible M18 mounting options
- 1200 psi washdown rating
- Non-adjustable, adjustable and teach versions
- 360° visible LED indicators
- Reverse polarity protection
- Short-circuit protected outputs
- Laser and Clear Object detecting models
- UL listed, CSA certified and CE marked for all applicable directives

Polarized Retroreflective

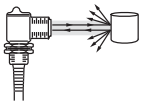


Field of View:1.5°
Emitter LED:Visible red 660 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10.8…30V DC, 35 mA	0.025…3 m (0.08…9.8 ft)	D.O.	NPN/PNP 100 mA, 1 ms	0.1 mA	4-pin micro (M12) QD	★	42EF-P2KBB-F4
		L.O. & D.O.	PNP 100 mA, 1 ms			★	**42EF-P2MPB-F4**

Recommended reflector: 92-39; For further information see 6-23

Standard Diffuse

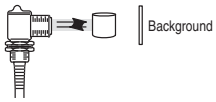


Field of View:5°
Emitter LED:Infrared 880 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10.8…30V DC, 35 mA	3…500 mm (0.1…19.7 in.)	L.O.	NPN/PNP 100 mA, 1 ms	0.1 mA	4-pin micro (M12) QD	★	42EF-D1JBAK-F4
		L.O. & D.O.	PNP 100 mA, 1 ms			★	**42EF-D1MPAK-F4**

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

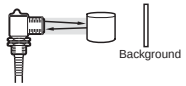
Background Suppression



Field of View:50 mm (2 in): 20°
100 mm (3.9 in): 8°
Emitter LED:Infrared 880 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10.8…30V DC, 35 mA	50 mm	L.O.	NPN and PNP 100 mA, 1 ms	0.1 mA	4-pin micro (M12) QD	★	42EF-B1JBBC-F4
	100 mm					★	42EF-B1JBBE-F4
	3…100 mm (0.1…3.9 in.)	Complementary L.O. & D.O.	PNP 100 mA, 1 ms			★	**42EF-B1MPBE-F4**

Fixed Focus Diffuse

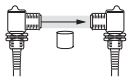


Spot Size:4 mm
Emitter LED:Visible red and green by Cat. No.

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10.8…30V DC, 30 mA	0.043 m (0.14 ft)	L.O.	NPN & PNP 100 mA, 1 ms	DC: 0.1 mA; AC: 0.4 mA	4-pin micro (M12) QD	★ ‡	42EF-F2JBC-F4
	—					★ ‡	42EF-F3JBC-F4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36
‡ Teachable

Transmitted Beam



Field of View:7°
Emitter LED:Infrared 880 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10.8…30V DC, 25 mA	20 m (65.6 ft)	D.O.	NPN/PNP 100 mA, 4 ms	0.1 mA	4-pin micro (M12) QD	★	42EF-R9KBB-F4
	4 m (13.1 ft)					★	42EF-R9KBBV-F4
	20 m (65.6 ft)	L.O. & D.O.	PNP 100 mA, 4 ms	DC: 0.1 mA; AC: 0.4		★	42EF-R9MPB-F4
10.8…30V DC, 35 mA	Depends on Receiver	—				★	**42EF-E1EZB-F4**

Photoelectric Laser Sensors — LaserSight

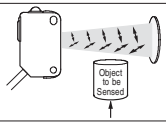
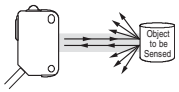
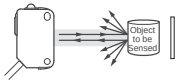
- Class 1 visible red laser source
- Diffuse, polarized retroreflective and transmitted beam sensing modes
- Industry standard housing in popular RightSight package
- Flexible M18 mounting or through hole mounting option

Sensing Mode	Operating Voltage/ Supply Current	Sensing Distance (Adjustable)	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connec- tion Type		Cat. No.
Diffuse	22…26V DC, 40 mA	3…300 mm (0.1…11.8 in.)	Light Operate	NPN and PNP/ 100 mA/ 1 ms	0.1 mA	4-pin micro (M12) QD	★ ‡	42EF-D8JBC-F4
							★	42EF-D8JBA-F4
Polarized retroreflective		0.025…3 m (0.08…9.8 ft)	Dark Operate				★ ‡ §	42EF-P8KBC-F4
Transmitted beam receiver		0.015…40 m (0.05…131.2 ft)					★	42EF-R7KBB-F4
Transmitted beam emitter							★	42EF-E8EZB-F4
§ Microcube reflector for polarized retroreflective laser sensors								92-118

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36
‡ Teachable
Recommended reflector: 92-118 / For further information see page 6-23

VisiSigh — 20 mm Miniature Rectangular

- Visible light source offered on all models for ease of alignment
- Optional snap-on adaptor enables 18 mm mount and makes sensor replacement a snap
- Patented ASIC design offers linear sensitivity adjustment, stability indication, and excellent noise immunity
- Compact sealed housing and cavity free design to minimize collection of dust and debris while allowing for easy sensor cleanup
- Threaded metal M12 or M8 connector on pigtail
- 360° visible LED status indicators
- Additional transmitted beam models available with infrared light source for superior cross talk immunity
- Input to disable light source on transmitted beam emitter

Sensing Mode	Operating Voltage/ Supply Current	Sensing Distance	Output Type/ Capacity	Sensitivity Adjustment	Cat. No.★‡
Polarized Retroflective					
	10…30V DC, 25 mA max.	0.025…3.5 m (0.08…11.5 ft.)	L.O. & D.O. / NPN	No Adjustment	42JS-P2MNB1-F4
			L.O. & D.O. / PNP		**42JS-P2MPB1-F4**
			L.O. & D.O. / NPN	Adjustment Knob	42JS-P2MNA2-F4
			L.O. & D.O. / PNP		**42JS-P2MPA2-F4**
Standard Diffuse					
	10…30V DC, 25 mA max.	3…800 mm (0.12…31.5 in.)	L.O. & D.O. / NPN	Adjustment Knob	42JS-D2MNA1-F4
			L.O. & D.O. / PNP		**42JS-D2MPA1-F4**
		3…250 mm (0.12…9.84 in.)	L.O. & D.O. / PNP		42JS-D2MPA2-F4
Background Suppression					
	10…30V DC, 25 mA max.	6…55 mm (0.24…2.17 in.)	L.O. & D.O. / PNP	No Adjustment	42JS-B2MPB1-F4
		2…130 mm (0.07…5.12 in.)	L.O. & D.O. / PNP		42JS-B2MPB2-F4
Transmitted Beam					
	10…30V DC, 25 mA max.	10 m (32.8 ft.)	NA	No Adjustment	**42JS-E2EZB1-F4**
			L.O. & D.O. / NPN	Adjustment Knob	42JS-R9MNA1-F4
			L.O. & D.O. / PNP		**42JS-R9MPA1-F4**
			NA	No Adjustment	42JS-E1EZB1-F4
			L.O. & D.O. / NPN	Adjustment Knob	42JS-R9MNA2-F4
			L.O. & D.O. / PNP		42JS-R9MPA2-F4

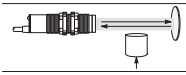
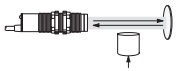
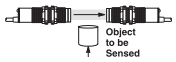
★ The suffix **-F4** denotes 4-pin DC micro connection type with 6 in. cable. For 4-pin DC pico QD with 6 in. cable replace the suffix **-F4** with **-Y4** (Example: Cat. No. 42JS-P2MPB1-Y4). For 2 m cable without QD replace the suffix **-F4** with **-A2** (Example: Cat. No. 42JS-P2MPB1-A2).

Connector Style		Cat. No.
2 m (6.5 ft) DC micro QD cordset	‡	**889D-F4AC-2**
2 m (6.5 ft) DC Pico QD cordset, 3-pin	‡	889P-F3AB-2
2 m (6.5 ft) DC Pico QD cordset, 4-pin	‡	889P-F4AB-2
Mounting Bracket. Used for 42JS VisiSight.		60-BJS-L1
Mounting Bracket. Used for 42JS VisiSight.		60-BJS-L2
Snap-on Adaptor 18 mm		60-AJS-18
32 mm (1.25 in) Diameter Reflector		**92-47**
76 mm (3 in) Diameter Reflector		92-124

‡ Longer lengths available.

18 mm Plastic Cylindrical Style

- Complementary light and dark operate outputs (selectable light or dark operate on background suppression models).
- Two LED indicators provide status of power, output, unstable operation and short-circuit protection.
- Improved 1 ms response time on most models.
- Extended range high-speed models with a 0.5 ms response time.
- Patented ASIC design offers linear sensitivity adjustment, stabilty indication and excellent noise immunity.
- Flat lens reduces dust collection and improves ease of cleaning.
- Visible red LED light source on polarized retroreflective models.
- Input to disable light source on transmitted beam emitter for testing and scanning purposes.

Sensing Mode	Operating Voltage/ Supply Current	Sensing Distance	Output Type/ Capacity/ Response Time	Sensitivity Adjustment		Cat. No. ★
Polarized Retroreflective						
	10…30V DC, 25 mA max.	0.002…3.8 m (0.0 …12.5 ft)	L.O. & D.O. PNP/100 mA/1 ms	No Adjustment		**42CA-P2MPB-D4**
Retroreflective						
	10…30V DC, 25 mA max.	0.002…4.8 m (0.0 …15.7 ft)	L.O. & D.O. PNP/100 mA/1 ms	No Adjustment		**42CA-U2MPB-D4**
		0.002…7 m (0.0 …23 ft)	L.O. & D.O. PNP/100 mA/1 ms	Potentiometer		**42CA-U2MPA-D4**
Background Suppression						
	10…30V DC, 30 mA	50 mm (2 in.)	Selectable L.O./D.O. PNP/100 mA/0.5 ms	No Adjustment	‡	42CA-B2LPBC-D4
		100 mm (3.9 in.)			‡	42CA-B2LPBE-D4
Standard Diffuse						
	10…30V DC, 30 mA max.	0…100 mm (0…3.9 in.)	L.O. & D.O. PNP/100 mA/1 ms	Potentiometer	‡	**42CA-D1MPAE-D4**
	10…30V DC, 25 mA max.	0…400 mm (0…15.7 in.)				**42CA-D1MPAJ-D4**
	10…30V DC, 30 mA max.	0…1 m (0…39.4 in.)				42CA-D1MPAL-D4
Transmitted Beam						
	10…30V DC, 30 mA max.	0.003…16 m (0.01…52.5 ft)	NA	No Adjustment		42CA-E1EZB1-D4
	10…30V DC, 25 mA max.		L.O. & D.O. PNP/100 mA/1 ms	Potentiometer		42CA-R1MPA1-D4

★ Suffix -D4 denotes 4-pin DC micro connection type. For 2 m cable without QD replace suffix -D4 with -A2 (e.g. 42CA-P2MPB-A2). All models shown in selection table above are PNP output versions. Replace the eighth digit (**P**) with **N** for NPN (example: 42CA-U2MNB-D4 is NPN).

‡ Refer to www.ab.com/sensors for updated information.

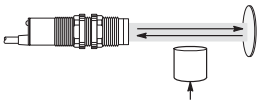
Cordsets and Accessories

Description	Description	Cat. No.
Cordsets	DC Micro QD Cordset, Straight, 4-pin, 2 m (6.5 ft)	**889D-F4AC-2**
	Right Angle DC Micro QD Cordset, 4-pin, 2 m (6.5 ft)	**889D-R4AC-2**
Mounting Brackets	Right Angle Mounting Bracket	**60-2657**
	Straight Mounting Bracket	60-2656
	Snap-Clamp Mounting Bracket	871A-SCBP18
	Right Angle Mounting Bracket	60-2654
Reflectors	Reflector	92-124
	32 mm (1.25 in) Diameter Reflector	**92-47**

Metal Cylindrical M18 Photoelectric Sensors

- M18 industry standard package
- Wide selection of sensing modes
- Laser models available
- 30V DC operation
- NPN or PNP outputs
- Fast response time
- cULus and CE marked for all applicable directives

Polarized Retroreflective

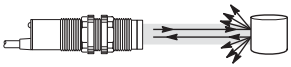


Field of View:1.8°
Emitter LED:Visible red 660 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…30V DC, 30 mA	0.003…3 m (0…9.9 ft)	L.O. & D.O.	PNP/ 100 mA/ 4 ms	<10µA	4-pin micro (M12) QD	★	42CM-P2MPB-D4

Recommended reflector: 92-39; For further information see page 6-23

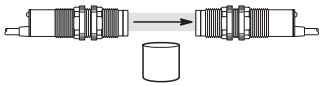
Standard Diffuse



Field of View:6.6°
Emitter LED:Visible red 660 nm

Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…30V DC, 30 mA	0…400 mm (0…13.6 in.) adjustable	L.O. & D.O.	PNP/ 100 mA/ 2 ms	<10µA	4-pin DC micro	★	42CM-D1MPAL-D4

Transmitted Beam



Field of View:1.6°
Emitter LED:Infrared 880 nm

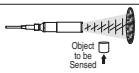
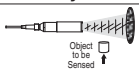
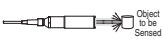
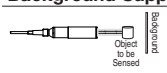
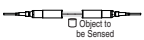
Operating Voltage/Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…30V DC, 25 mA	3…20 m(0…65.6 ft)	NA light source		<10µA	4-pin micro (M12) QD	★	42CM-E1EZB-D4
		Selectable L.O. or D.O.	PNP/ 100 mA/ 2 ms			★	42CM-R1MPB-D4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

18 mm Stainless Steel Cylindrical Style

- Ferromagnetic teach for easy sensor programming
- Smooth barrel design minimizes the accumulation of undesired particles and allows for fast and easy clean up
- Extended temperature operating range
- 18 mm stainless steel 316L enclosure with laser etched markings
- Background suppression models for improved detection of shiny objects
- Two teach modes: standard and precision
- Teach lockout feature prevents unauthorized users from changing the settings
- Input to disable light source on transmitted beam emitter
- IP69K, ECOLAB and Johnson Diversey rated

42CS Food and Beverage Sensors

Sensing Mode	Operating Voltage/ Supply Current	Sensing Distance	Output Mode/ Current Capacity/ Response Time	Output Type	Sensitivity Adjustment		Cat. No. ★‡
Polarized Retroreflective							
	10…30V DC, 35 mA max.	4 m (13.1 ft)	Complementary L.O. & D.O. 100 mA/1 ms	PNP	No adjustment		**42CSS-P2MPB1-D4**
Clear Object Detection							
	10…30V DC, 35 mA max.	1 m (3.2 ft)	Complementary L.O. & D.O. 100 mA/1 ms	PNP	Ferro-magnetic teach		**42CSS-C2MPA1-D4**
Standard Diffuse							
	10…30V DC, 35 mA max.	100 mm (3.9 in.)	Complementary L.O. & D.O. 100 mA/1 ms	PNP	Ferro-magnetic teach		**42CSS-D2MPA1-D4**
		400 mm (15.8 in.)		PNP			**42CSS-D1MPA2-D4**
		800 mm (31.5 in.)		PNP			**42CSS-D1MPA3-D4**
Background Suppression							
	10…30V DC, 35 mA max.	60…100 mm (2.4…3.9 in.)	Complementary L.O. & D.O. 100 mA/1 ms	PNP	Ferro-magnetic teach		**42CSS-B2MPA1-D4**
Transmitted Beam							
	10…30V DC, 35 mA max.	20 m (65.6 ft)	NA Light Source 100 mA/1 ms	NA	No adjustment	‡	**42CSS-E1EZB1-D4**
			Complementary L.O. & D.O. 100 mA/1 ms	PNP		§	**42CSS-R9MPB1-D4**

★ The prefix 42CSS denotes smooth enclosure. For threaded models replace the **42CSS** with **42CST**.
Example: **Cat. No. 42CSS-P2MPB1-D4** becomes **Cat. No. 42CST-P2MPB1-D4.**
‡ Transmitted beam emittar.
§ Transmitted beam recalver.

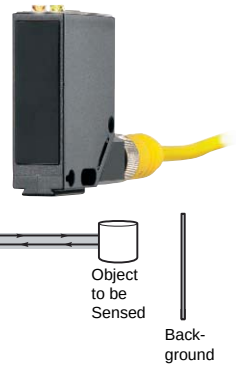
Accessories

Description		Cat. No.
DC micro (M12) QD cordset with stainless steel coupling nut, 4-pin, 2 m (6.5 ft)	♣	**889DS-F4AC-2**
DC micro QD cordset, 2 m (6.5 ft)	♣	889D-F4ACDM-2

Recommended mounting brackets: 60-2656, 60-2657, 60-BCS-18B, 871A-BRS18; See pages 6-10, 6-20 or 6-30.
Recommended reflectors: 92-39, 92-47, 92-90; See page 6-23.
♣ For other cable lengths visit our website: www.ab.com/catalogs

Background and Foreground Suppression Sensors

- Adjustable background and foreground suppression models
- Adjustable sensing range
- Power, output, and stability status indicators
- Micro QD connection with 90° swivel
- Protected from mis-wiring
- NPN and PNP outputs
- Fast 1 ms response time



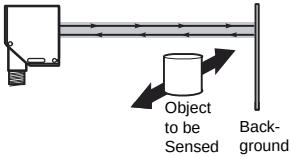
Background Suppression Sensors

Detection by presence of reflected light from the target.

Operating Voltage/ Supply Current	Sensing Distance (Adjustable)	LED Source	Output Mode	Output Type/ Capacity/ Response Time	Connection Type		Cat. No.
20…30V DC, 22 mA	20…300 mm (0.78…11.8 in.)	Infrared 880 nm	Light operate	NPN and PNP 100 mA/1 ms	4-pin micro (M12) QD	★	44BSB-1JBA1-D4
			Dark Operate			★	44BSB-1KBA1-D4

Foreground Suppression Sensors

Detection by absence of reflected light from the background.



Operating Voltage/ Supply Current	Sensing Distance (Adjustable)	LED Source	Output Mode	Output Type/ Capacity/ Response Time	Connection Type		Cat. No.
20…30V DC, 22 mA	20…200 mm (0.78…7.8 in.)	Infrared 880 nm	Light Operate	NPN and PNP 100 mA/1 ms	4-pin micro (M12) QD	★	44BSN-1JBA1-D4
			Dark operate			★	44BSN-1KBA1-D4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

Long Range Background Suppression Sensors

- Adjustable range settings
- Slim flatpack housing design
- Highly visible LED indicators
- Both NPN and PNP outputs
- Short-circuit protected outputs
- Fast 2 ms response time

Operating Voltage/ Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
Field of View: 1.7°							
12…24V DC, 30 mA	0.2…1 m (0.66…3.3 ft)	Selectable L.O. or D.O.	NPN and PNP/ 100 mA/2 ms	0.1mA	4-pin micro (M12) QD	★	42BT-B2LBSL-F4
Field of View: 2.8°							
12…24V DC, 30 mA	0.2…2 m (0.66…6.4 ft)	Selectable L.O. or D.O.	NPN and PNP/ 100 mA/2 ms	0.1mA	4-pin micro (M12) QD	★	42BT-B1LBSN-F4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

Photoelectric Sensors Standard and Timing

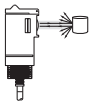
- Harsh duty 30 mm package
- Wide selection of sensing modes
- Wide selection of operating modes
- Both DC and AC/DC operation
- Models with teach function
- Standard ON/OFF and timing versions
- Fast response time
- Variety of connection types
- UL listed, CSA approved and CE marked for all applicable directives

Polarized Retroreflective

Field of View:1.5°
Emitter LED:Visible red 660 nm

Operating Voltage/ Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…40V DC, 30 mA	50.8 mm…4.87 m (2 in…6 ft) with 76 mm (3 in.) Reflector	Selectable L.O. or D.O.	NPN & PNP/ 250 mA/ 2 ms	10 µA	4-pin DC micro	★	**42GRU-9200-QD**

Standard Diffuse

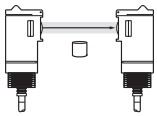


Field of View:3.5°
Emitter LED:Infrared 880 nm

Operating Voltage/ Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…40V DC, 30 mA	50.8 mm…1.52 m (2 in. …5 ft) to White Paper	Selectable L.O. or D.O.	NPN & PNP/ 100 mA/ 2 ms	10 µA	4-pin DC micro	★	42GLP-9000-QD
						★ ‡	42GSP-9000-QD

‡ Teachable

Transmitted Beam



Field of View:1.5°
Emitter LED:Infrared 880 nm

Operating Voltage/ Supply Current	Sensing Distance	Output Mode	Output Type/ Capacity/ Response Time	Leakage Current, Max.	Connection Type		Cat. No.
10…40V DC, 25 mA	Depends on light source	Receiver Selectable L.O. or D.O.	NPN/PNP/ 250 mA/ 5 ms	10 µA	4-pin DC micro	★	**42GRR-9000-QD**
10…264V AC/DC, 15 mA	0.025…61 m (0.83…200 ft)	NA light source	—	—	4-pin DC micro	★	**42GRL-9000-QD**
	0.025…152 m (0.83…500 ft)	NA Light Source	—	—	4-pin DC micro	★	42GRL-9040-QD

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

Precise Laser Distance Measurement Sensor

- Noncontact measurement
- Visible red laser, Class 2
- Analog and discrete outputs
- Easy set-up using Teach-in buttons
- Scalable analog output (4…20 mA)
- Configurable discrete output (N.O./N.C.)
- IP 67 enclosure
- 270° rotatable connector
- Set point adjustment via pushbuttons
- Self-contained sensor
- Laser-disable control
- Teach-in lock out
- Averaging and speed mode

Sensing Range [mm (in.)]	Measuring Range—mm (in)	Spot Size [mm (in.)]		Cat. No.
30…100 (1.18…3.93)	70 (2.75)	1.5 x 3/1.5 x 3.25 (0.06 x 0.12/0.06 x 0.13)	★	45BPD-8LTB1-D5
80…300 (3.14…11.8)	220 (8.66)	1.5 x 3.5/2.0 x 4.5 (0.06 x 0.14/0.08 x 0.18)	★	45BPD-8LTB2-D5

★ DC Micro QD / M12 Cordset Cat. No. 889D-F5AC-2, see page 4-36

Long Range Laser Distance Measurement Sensor

- Eye Safe Class 1 laser for operation
- Visible red Class 2 laser for set-up
- 6 m sensing range
- 2 discrete outputs (PNP) and analog output (4…20 mA)
- Easy set-up using teach-in buttons
- IP 67 enclosure
- Self-contained sensor

Sensing Range [mm (in.)]	Measuring Range—mm (in)	Spot Size [mm (in.)]		Cat. No.
200…6000 (7.87…236.22)	5800 (228.35)	4 x 7 @ 2 m (0.16 x 0.28 @ 6.56 ft)	★	**45CPD-8LTB1-D5**

★ DC Micro QD / M12 Cordset Cat. No. 889D-F5AC-2, see page 4-36

45CLR ColorSight Color / Contrast Sensors

- Wide sensing range tolerance
- Three channel color matching (three outputs)
- Gating input (also known as inhibiting input)
- Adjustable tolerance for high precision to general color matching
- Pulse stretching capability (50 ms off delay)
- Teach colors via pushbuttons
- External teach capability (one output)
- Teach button lockout
- 270° rotatable connector
- Compact size IP67 enclosure

Sensing Range [mm (in.)]	Sensing Distance Tolerance ★	Spot Size [mm (in.)]	Output Type		Cat. No.
12…32 (0.47…1.26)	±6 mm (0.24 in.)	4 (0.16) @ 22 (0.87)	3 PNP	‡	**45CLR-5JPC1-D8**
12…32 (0.47…1.26)	±6 mm (0.24 in.)	4 (0.16) @ 22 (0.87)	RS-485, 1 PNP	‡	45CLR-5LPS1-D8

★ For medium color tolerance settings within a specified range.
‡ Items preferred stocked

Cordsets and Accessories

Description	Cat. No.
DC Micro Style QD Cordset, 8-Pin	**889D-F8AB-2**
Mounting bracket for 45BPD, 45BRD, 45CLR	45BPD-BKT1
Mounting bracket for 45BPD, 45BRD, 45CLR	45BPD-BKT2
Communications Cable (RS-485) for MicroLogix	**1763-NC01**
AIC+ Advanced Interface Converter	**1761-NET-AIC**

45PVA Slim Type Picking Sensors

- Robust metal enclosure with super slim 13 mm profile
- Large highly-visible job indicator lights
- Optional red fault light indicator to notify operator of incorrect component selection
- Dip switch selectable lighting operation for job lights
- NPN or PNP dip switch selectable output reduces inventory
- Two frequency dip switch selectable cross talk protection
- Different sizes are available for different component racks. Transmitted beam models are available in four sizes (100 mm (4 in), 225 mm (9 in), 300 mm (12 in), and 375 mm (15 in)). Retroreflective/diffuse models are available in two sizes (100 mm (4 in) and 225 mm (9 in)).

Sensing Mode	Light Source	Number of Optical Axes	Detection Width	Current Consum-ption	Response Time	Cat. No.
Parts Verification Array	Infrared 880 nm	5	100 mm (3.93 in.)	130 mA	35 ms (light operate), 25 ms (dark operate)	45PVA-1LEB1-F4
		10	225 mm (8.85 in.)	140 mA	68 ms (light operate), 42 ms (dark operate)	45PVA-1LEB2-F4
		13	300 mm (11.8 in.)	150 mA	70 ms (light operate), 42 ms (dark operate)	45PVA-1LEB3-F4
		16	375 mm (14.7 in.)	155 mA	94 ms (light operate), 58 ms (dark operate)	45PVA-1LEB4-F4

45AST Area Arrays

- Introduces two-dimensional array scanning technology
- PNP or NPN output
- Minimum object resolution from 11…17 mm (0.43…0.66 in)
- Sensing ranges up to 2.5 m (8.2 ft)
- IP 67 rated housing
- CE marked for all applicable directives
- Easy bracket-free mounting
- Highly visible alignment LEDs

Current Consumption	Sensing Range [m (ft)]	Number of Optical Axes	Response Time	Resolution Diameter [mm (in.)]	Sensing Height [mm (in.)]	Output Type		Cat. No.
70 mA (Emitter), 65 mA (Receiver)	0.5…2 (1.6…6.5)	5	4 ms	15 (0.59)	50 (2)	PNP	‡	45AST-1JPB1-F4
80 mA (Emitter), 110 mA (Receiver)	0.15…0.80 (0.5…2.6)	10	8 ms	11 (0.43)	100 (3.9)	PNP	‡	45AST-1JPB2-F4
	0.5…2.5 (1.6…8.2)			13 (0.51)	100 (3.9)	PNP	‡	**45AST-1JPB3-F4**
	0.15…0.80 (0.5…2.6)			17 (0.66)	150 (6)	PNP	‡	45AST-1JPB4-F4

‡ Items preferred stocked

45MLA Measuring Arrays and Controllers

- Height measuring capability
- Slim profile array housing
- Long operating range — 4 m
- Fast reaction time and measurement speed
- Individual beam status available via controller (serial communication models only)

Measuring Light Array, Standard

Sensing Height [mm]	Beam Spacing [mm]	No. of Beams	Cat. No.
300	10	30	45MLA-AT030010
600		60	45MLA-AT060010
900		90	45MLA-AT090010
1200		120	45MLA-AT120010
300	25	12	45MLA-AT030025
600		24	45MLA-AT060025
900		36	45MLA-AT090025
1200		48	45MLA-AT120025

Measuring Light Array, ATEX Zone 22

Sensing Height [mm]	Beam Spacing [mm]	No. of Beams	Cat. No.
200	10	20	**45MLA-DT0200P10**
400		40	**45MLA-DT0400P10**
600		60	**45MLA-DT0600P10**
1600		160	45MLA-ET1600P10
2000	25	80	45MLA-ET2000P25
2500		100	45MLA-ET2500P25

45MLA Controllers and Required Accessories

Description	Cat. No.
Controller - Analog	45MLA-CTRL-ALG
Controller - Basic	**45MLA-CTRL-BSC**
Controller - I/O	**45MLA-CTRL**
Controller - RS485	45MLA-CTRL-485
Controller - CAN	45MLA-CTRL-CAN
3 m patchcord, PVC jacket	**445L-AC8RJ3**
5 m patchcord, M12 to RJ45	445L-AC8RJ5
8 m patchcord, PVC jacket	445L-AC8RJ8

45DLA Discrete Light Arrays

- Integrated light array controller
- IP54
- Simple, flexible mounting
- Optically synchronized (no electrical connection between emitter and receiver required)
- Push/pull (PNP/NPN) outputs (connect to sinking or sourcing inputs)
- Wiring selectable range and output state (light/dark operate)
- 30 mm resolution
- Sensing height of 118…734 mm (4.6…28.9 in.)

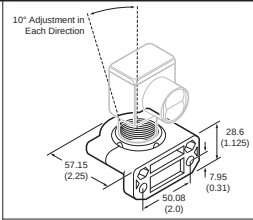
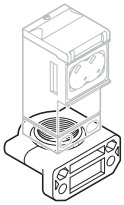
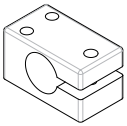
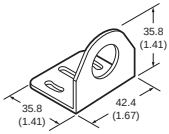
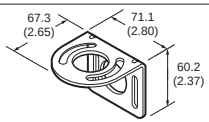
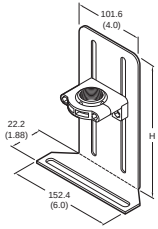
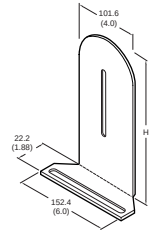
Beams	Sensing Height [mm (in.)]	Response Time	Cat. No.★
4	118 (4.65)	25 ms	45DLA-1LEB1T-F4
8	206 (8.11)	45 ms	45DLA-1LEB2T-F4
16	382 (15.04)	85 ms	45DLA-1LEB4T-F4
24	558 (21.97)	125 ms	45DLA-1LEB6T-F4
32	734 (28.9)	165 ms	45DLA-1LEB8T-F4

Note: Both emitter (light source) and receiver arrays are included in the package. To identify the emitter, replace the **T** in the cat. no. with **E**. To identify the receiver, replace the **T** in the cat. no. with **R**. Example: Cat. No. 45DLA-1LEB2T-F4 contains one Cat. No. 45DLA-1LEB2E-F4 emitter array and one Cat. No. 45DLA-1LEB2R-F4 receiver array. Emitter and receiver arrays are not sold separately.

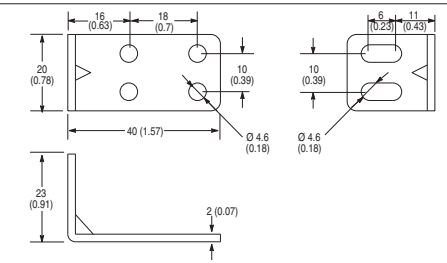
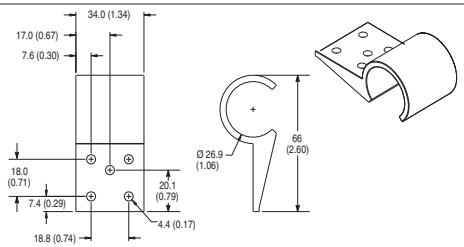
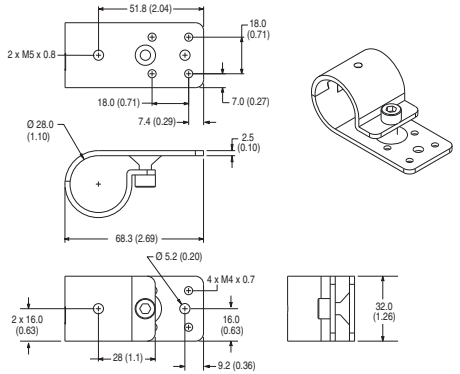
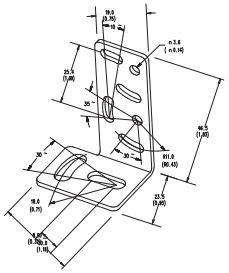
Cordsets and Accessories 45PVA, 45DLA and 45AST

Description	Cat. No.
DC micro (M12) QD cordset, 4-pin, 2 m	**889D-F4AC-2**
DC micro (M12) QD patchcord, 4-pin, 2 m	889D-R4ACDM-2
DC micro (M12) Splitter Tee, 5-pin for 45PVA	**1485P-RDR5**
DC micro (M12) Splitter Tee for 45DLA	**879D-F4DM**
Dual port distribution box (up to 8 TB pairs of Retro/Diffuse units)	**898D-58DT-B5**

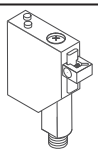
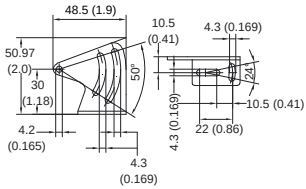
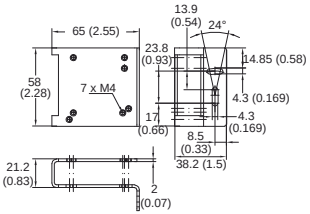
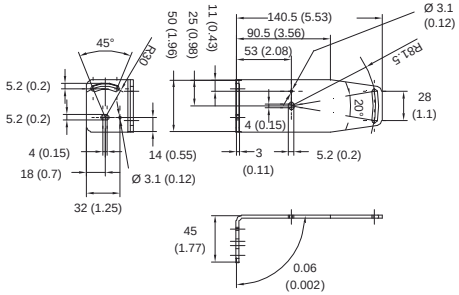
Mounting Brackets

Description	Dimensions—mm (in)	Height	Cat. No.
Swivel/tilt bracket allows ±10° vertical and 360° rotation adjustment		—	**60-2649**
		—	**60-2439**
Straight mounting bracket for smooth barrel		—	**60-BCS-18B**
Right angle mounting bracket allows 30° horizontal adjustment. Used for RightSight, MiniSight, 42CA, 42CB, and 42CM style sensors.		—	**60-2657**
Right angle mounting bracket permits a 360° rotation adjustment. Used for Series 9000 style sensors.		—	60-2421
Photoelectric sensor mounting bracket with vertical height adjustment for any swivel/tilt bracket (not included).		101.6 (4.0)	60-2721
		152.4 (6.0)	60-2722
		203.2 (8.0)	60-2723
		254 (10)	60-2724
Reflector mounting bracket with vertical height adjustment for 3 in. diameter (or smaller) center-mounted reflector.		203.2 (8.0)	60-2718
		254 (10)	60-2719
		304.8 (12.0)	60-2720

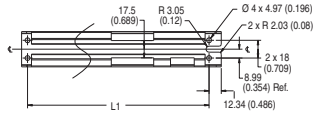
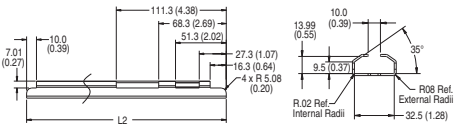
Mounting Brackets

Description	Dimensions—mm (in)	Cat. No.
Mounting Brackets (2 Brackets, included)		
Mounting Bracket. Used for Parts Verification Array 45PVA		60-2773
Optional Mounting Brackets (not included with sensor)		
Mounting Bracket. Used for Parts Verification Array 45PVA		60-2779
Mounting Bracket. Used for Parts Verification Array 45PVA		60-2772
Mounting Bracket. Used for Background and Foreground Suppression 44B.		60-BKTL-SS

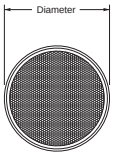
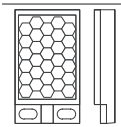
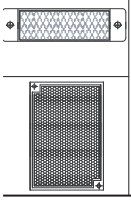
Mounting Brackets

Description	Dimensions—mm (in)	Cat. No.
Dovetail Bracket. Used for Background and Foreground Suppression Sensors 44B		44B-BKT
Mounting bracket for 45BPD, 45BRD, 45CLR		45BPD-BKT1
Mounting bracket for 45BPD, 45BRD, 45CLR		45BPD-BKT2
Mounting bracket for 45CPD		45CPD-BKT1

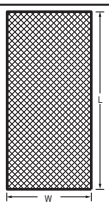
Protective Metal Brackets (Galvanized Steel)

L1 mm (in)	L2 mm (in)	Dimensions—mm (in)	Cat. No. (1 bracket)	Cat. No. (2 brackets)
130 (5.11)	148.36 (5.84)		60-2785-1	60-2775-1
254 (10.03)	273.35 (10.76)		60-2786-1	60-2776-1
330 (12.99)	348.36 (13.71)		NA	60-2777-1
405 (15.94)	423.34 (196.6)		NA	60-2778-1

Reflectors

	Description	Dimension—mm (in)	Cube Style	Mounting	Temperature —C (F)	Cat. No.
	Diameter with center mount hole	Diameter 76.2 (3)	Corner Cube	Thru-Hole	≤65 ° (150 °)	**92-39**
				Thru-Hole		92-89
	Diameter for clear object sensors			Tabs		92-90
	32 mm (1.25 in) diameter	Diameter 31.75 (1.25)		Adhesive		**92-47**
				M5 Screw		92-105
				Snap-Fit		92-106
	Microcube reflector for polarized retroreflective laser sensors	Diameter 51 x 61 (2 x 2.5)	Micro Cube	Thru-hole	≤65 ° (150 °)	92-118
	Reflector, rectangular with mounting tabs and bracket. Right angle bracket and adhesive tape.	23 x 42.5 (0.91 x 1.67)	Corner Cube	Thru-Hole	≤55° (130°)	92-93
	Reflector, rectangular with mounting tabs	18.5 x 120 (0.73 x 4.72)	Corner Cube	Thru-Hole	≤65° (150°)	92-107
	Reflector, square with mounting tabs	100 x 100 (4 x 4)	Corner Cube	Thru-hole	≤65 ° (150 °)	92-108
	Reflector, rectangular with mounting tabs	19 x 72.5 (0.75 x 2.85)	Corner Cube	Thru-Hole	≤55° (130°)	92-111
		23.5 x 55 (0.924 x 2.17)				92-112
		40.5 x 60 (1.6 x 2.36)				92-113
						92-117

Reflective Tapes (included with retroreflective/diffuse models)

	Dimensions			
	Width [mm (in.)]	Length [mm (in.)]	For Use With	Cat. No.
	50 (2)	120 (4.7)	45PVA-2LEA1-F4	92-122
	50 (2)	245 (9.6)	45PVA-2LEA2-F4	92-123

SENSORS

Inductive Proximity Sensors

Product Line Overview

Proximity Sensors (872C, 871TM, 871P)

Bulletin	**872C**	**871TM**	**871TS**	**871P**	**Inductive Proximity Accessories**
Type	Proximity Sensors WorldProx Inductive	Proximity Sensors Stainless Steel Inductive	Proximity Sensors Stainless Steel 316L	VersaCube Inductive Sensors	Mounting Brackets
Features	• 360° visible LED • Nickel-Plated Brass or Plastic Barrel • Standard and extended sensing models	• Full mechanical seal with leak-proof front end • Ideal for heavy duty, metalworking and food applications • High enclosure, cleaning resist and washdown rating (82,7 bar / 1200psi) • Standard and extended sensing models	• 316L Stainless Steel barrel for Food & Beverage • IP69K + ECOLAB • Standard and extended sensing models	Long distance cube type Rugged burn and weld-slag resistand Weld field immune Equal sensing (factor1) models available	Wide variety of metal and plastic mounting brackets Right angle, clamp and spring loaded brackets
Barrel Size	Diameter 6.5 mm, M8, M12, M18, M30	M8, M12, M18, M30	M12, M18	Cube 40 x 40 mm	—
Sensing Range Standard Sensing Range Extended Sensing Range	 2 mm…15 mm 2 mm…20 mm	 2 mm…15 mm 2 mm…40 mm	 — 2 mm…12 mm	 20 mm…40 mm —	 — —
Output Mode	PNP Normally Open Shielded Nonshielded 3-wire DC 2-wire AC	PNP Normally Open Shielded Nonshielded 3-wire DC 2-wire AC	—	Normally Open Shielded Nonshielded 3-wire DC	—
Connection	Cable Micro / M12 Connector	Cable Micro / M12 Connector	—	Micro / M12 Connector	—
Supply Voltage	10…30V DC 20…250V AC	10…30V DC 20…250V AC	—	10…30V DC	—
Enclosure Rating IP NEMA Special enclosure	 IP 67 NEMA 1,2,3,4,6P,12,13 —	 IP 67 NEMA 1,2,3,3R,4,4X,6, 6P,12,13 1200 psi / 82.7 bar washdown rating	 IP 69K + ECOLAB — —	 IP 67 NEMA 1,2,3,4,6P,12,13 1200 psi / 82.7 bar washdown rating	 — — —
Approvals	UL, c-UL, CE	UL, CSA, CE	UL, CSA, CE	UL, c-UL, CE	—
Product Selection	**See page 6-25**	**See page 6-27**	**See page 6-28**	**See page 6-29**	
Accessories	**See page 6-29**	**See page 6-29**	**See page 6-29**	**See page 6-29**	**See page 6-29**

Proximity Sensors WorldProx Inductive

3-Wire DC Standard and Short Barrel

- 3-wire operation
- 3-conductor, 3- or 4-wire connection
- 10…30V DC
- Normally-open or normally-closed output
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- UL listed, cUL listed and CE marked for all applicable directives

Standard Barrel

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
Cable Style	M6.5	2 (0.08)	Yes	N.O.	PNP	2000		872C-MM1NP7-E2
	M8	2 (0.08)	Yes	N.O.	PNP	2500		**872C-D2NP8-E2**
		3 (0.12)	No	N.O.	PNP	2500		872C-D3NP8-E2
	M12	3 (0.12)	Yes	N.O.	PNP	1300		**872C-D3NP12-E2**
		4 (0.16)	No	N.O.	PNP	1300		872C-D4NP12-E2
	M18	5 (0.20)	Yes	N.O.	PNP	1500		**872C-D5NP18-E2**
Pico QD Style	M6.5	2 (0.08)	Yes	N.O.	PNP	2000		872C-MM1NP7-P3
	M8	2 (0.08)	Yes	N.O.	PNP	2500		872C-D2NP8-P3
		2 (0.08)	Yes	N.C.	PNP	2500		872C-D2CP8-P3
		3 (0.12)	No	N.O.	PNP	2500		872C-D3NP8-P3
Micro QD Style	M8	2 (0.08)	Yes	N.O.	PNP	2500	★	**872C-D2NP8-D4**
		2 (0.08)	Yes	N.C.	PNP	2500	★	872C-D2CP8-D4
		3 (0.12)	No	N.O.	PNP	2500	★	**872C-D3NP8-D4**
	M12	3 (0.12)	Yes	N.O.	PNP	1300	★	**872C-D3NP12-D4**
		4 (0.16)	No	N.O.	PNP	1300	★	**872C-D4NP12-D4**
	M18	5 (0.2)	Yes	N.O.	PNP	1500	★	**872C-D5NP18-D4**
		8 (0.31)	No	N.O.	PNP	1500	★	**872C-D8NP18-D4**

Short Barrel

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
Cable style	M12	3 (0.12)	Yes	N.O.	PNP	1300	★	872C-DH3NP12-E2
		4 (0.16)	No	N.O.	PNP	1300	★	872C-DH4NP12-E2
	M18	5 (0.2)	Yes	N.O.	PNP	1500	★	872C-DH5NP18-E2
		8 (0.32)	No	N.O.	PNP	1500	★	872C-DH8NP18-E2
	M30	10 (0.39)	Yes	N.O.	PNP	1000	★	872C-DH10NP30-E2
		15 (0.59)	No	N.O.	PNP	1000	★	872C-DH15NP30-E2
Micro QD style	M12	3 (0.12)	Yes	N.O.	PNP	1300	★	**872C-DH3NP12-D4**
		4 (0.16)	No	N.O.	PNP	1300	★	**872C-DH4NP12-D4**
	M18	5 (0.20)	Yes	N.O.	PNP	1500	★	**872C-DH5NP18-D4**
		8 (0.31)	No	N.O.	PNP	1500	★	872C-DH8NP18-D4
	M30	10 (0.39)	Yes	N.O.	PNP	1000	★	872C-DH10NP30-D4
		15 (0.59)	No	N.O.	PNP	1000	★	872C-DH15NP30-D4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

3-Wire DC Extended Sensing

- 3-wire operation
- 3-conductor, 4-wire connection
- 10…30V DC
- Normally-open or normally-closed output
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- UL and cUL recognized and CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
Cable Style	M12	4 (0.16)	Yes	N.O.	PNP	1300		872C-M4NP12-E2
		8 (0.31)	No	N.O.	NPN	1300		872C-N8NP12-E2
	M18	8 (0.31)	Yes	N.O.	PNP	1500		872C-M8NP18-E2
		12 (0.47)	No	N.O.	PNP	1500		872C-N12NP18-E2
Pico QD Style	M8	3 (0.12)	Yes	N.O.	NPN	2500	★	872C-M3NP8-P3
		3 (0.12)	Yes	N.O.	PNP	2500	★	872C-M3NP8-E2
		4 (0.16)	No	N.O.	PNP	2500	★	872C-N4NP8-E2
		6 (0.23)	No	N.O.	PNP	500	★	872C-N6NP8-P3
Micro QD style	M8	3 (0.12)	Yes	N.O.	PNP	2500	★	872C-M3NP8-D4
		6 (0.23)	No	N.O.	PNP	500	★	872C-N6NP8-D4
	M12	4 (0.16)	Yes	N.O.	PNP	1300	★	**872C-M4NP12-D4**
		8 (0.31)	No	N.O.	PNP	1300	★	**872C-N8NP12-D4**
	M18	8 (0.31)	Yes	N.O.	PNP	1500	★	872C-M8NP18-D4
		12 (0.47)	No	N.O.	PNP	1500	★	872C-N12NP18-D4
	M30	15 (0.59)	Yes	N.O.	PNP	1000	★	**872C-M15NP30-D4**
		20 (0.79)	No	N.O.	PNP	1000	★	872C-N20NP30-D4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

2-Wire AC

- 2-wire operation
- 3-conductor or 3-wire connection
- 20…250V AC (20…240V AC for 8 mm)
- Normally-open or normally-closed output
- False pulse and transient noise protection
- Extended sensing distance on M18 unshielded models
- CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency (Hz)		Cat. No.
Cable Style	M8	1.5 (0.06)	Yes	N.O.	25		872C-A1N8-A2
	M12	2 (0.08)	Yes		15		872C-A2N12-A2
		4 (0.16)	No				872C-A4N12-A2
	M18	5 (0.20)	Yes				872C-A5N18-A2
		10 (0.39)	No				**872C-A10N18-A2**
	M30	15 (0.59)	No				**872C-A15N30-A2**
Micro QD Style	M12	2 (0.08)	Yes			‡	872C-A2N12-R3
		4 (0.16)	No			‡	872C-A4N12-R3
	M18	5 (0.20)	Yes			‡	872C-A5N18-R3
		10 (0.39)	No			‡	872C-A10N18-R3

‡ AC Micro QD / M12 ordset Cat. No. 889R-F3ECA-2, see page 4-38

Proximity Sensors Stainless Steel Inductive

3-Wire DC

- 3-wire operation
- 3-conductor or 4-wire connection
- 10…30V DC
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Normally-open or normally-closed output
- UL listed, CSA certified and CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
ToughLink cable	M18	5 (0.20)	Yes	N.O.	PNP	60		871TM-DH5NP18-H2
		8 (0.31)	No	N.O.	PNP	40		871TM-DH8NP18-H2
Micro QD style	M12	2 (0.08)	Yes	N.O.	PNP	75	★	871TM-DH2NP12-D4
		4 (0.16)	No	N.O.	PNP	70	★	**871TM-DH4NP12-D4**
	M18	5 (0.20)	Yes	N.O.	PNP	60	★	871TM-DH5NP18-D4
		8 (0.31)	No	N.O.	PNP	40	★	**871TM-DH8NP18-D4**

3-Wire DC Extended Range

- 3-wire operation
- 3-conductor or 4-wire connection
- 10…30V DC
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Normally-open or normally-closed output
- Equal sensing for both steel and aluminum
- CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
Micro QD Style	M8	3 (0.12)	Yes	N.O.	PNP	700	★	871TM-M3NP8-D4
		6 (0.23)	Yes	N.O.	PNP	700	★	871TM-N6NP8-P3
Micro QD Style	M8	3 (0.12)	Yes	N.O.	PNP	700	★	871TM-M3NP8-D4
		6 (0.23)	Yes	N.O.	PNP	700	★	871TM-N6NP8-D4
	M12	6 (0.23)	Yes	N.O.	PNP	400	★	871TM-M6NP12-D4
		10 (0.39)	No	N.O.	PNP	400	★	871TM-N10NP12-D4
	M18	10 (0.39)	Yes	N.O.	PNP	200	★	871TM-M10NP18-D4
		20 (0.79)	No	N.O.	PNP	200	★	871TM-N20NP18-D4
	M30	20 (0.79)	Yes	N.O.	PNP	80	★	871TM-M20NP30-D4
		40 (1.57)	No	N.O.	PNP	80	★	871TM-N40NP30-D4

★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

Bulletin 871TS Food and Beverage

- Stainless steel 316L barrel
- IP67, IP68, and IP69K enclosure ratings
- FDA Certified, PPS sensing face
- ECOLAB & Johnson Diversey Certified
- Short circuit, false pulse, reverse polarity, overload, and transient noise protection
- cULus Listed and CE Marked for all applicable directives
- Extended temperature rating (-40…+80 °C)

Connection Type	Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.
Micro QD style	12	4 (0.16)	Yes	N.O.	PNP	2000	871TS-M4BP12-D4
		6 (0.24)	No	N.O.	PNP	2000	871TS-N6BP12-D4
	18	8 (0.31)	Yes	N.O.	PNP	2000	871TS-M8BP18-D4
		12 (0.47)	No	N.O.	PNP	2000	871TS-N12BP18-D4
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft)), Micro QD / M12 Style							**889D-F4AC-2**

Note: N.C. and NPN versions also available.

VersaCube Inductive Sensors

3-Wire DC VersaCube

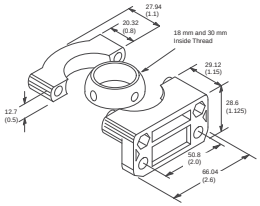
- New rugged housing
- Weld-field immune models
- Burn and weld-slag resistant body on weld-field immune models
- Convenient mounting base
- 3-wire operation
- 4-pin connection
- 10…60V DC
- Normally-open or normally-closed output
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- UL listed, cUL certified and CE marked for all applicable directives

Connection Type	Head Size	Weld Field Immune	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)		Cat. No.
Micro QD Style	40 mm	No	20 (0.79)	Yes	N.O.	PNP	100	★	871P-D20NP40-D4
			40 (1.57)	No	N.O.	PNP	100	★	871P-D40NP40-D4

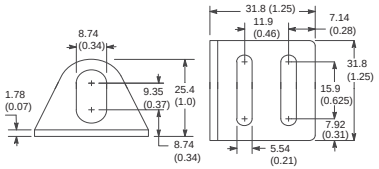
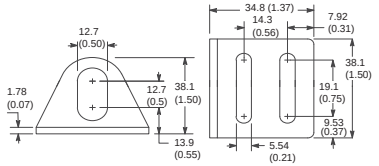
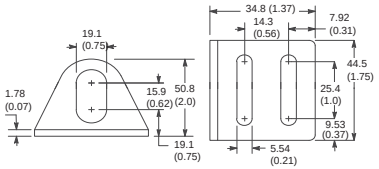
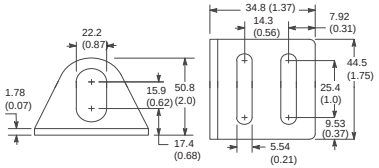
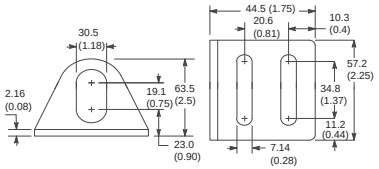
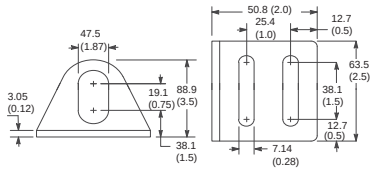
★ DC Micro QD / M12 Cordset Cat. No. 889D-F4AC-2, see page 4-36

Accessories

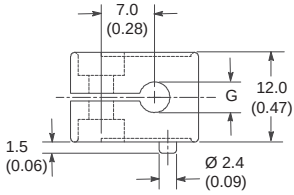
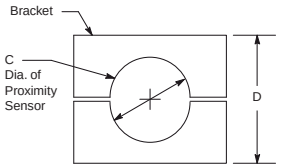
Mounting Brackets for Tubular Proximity Sensors—Swivel/Tilt Style

Description	Dimensions—mm (in)	Cat. No.
The swivel/tilt mounting bracket provides both axial and 10° tilt adjustment for our 18mm and 30mm tubular-style products.		60-2649
		60-2439

Mounting Brackets for Tubular Proximity Sensors—Right Angle Style

Proximity Tube Diameter [mm (in.)]	Dimensions—mm (in)	Material	Cat. No.
8 (0.31)		Zinc–Plated Steel	871A-BRN8
		Stainless Steel	871A-BRS8
12 (0.47)		Zinc–plated steel	871A-BRN12
		Stainless Steel	871A-BRS12
18 (0.71)		Zinc–plated steel	871A-BRN18
		Stainless Steel	871A-BRS18
For use with the 871A-BXN12 or 871A-BXS12 Spring Return Brackets.		Zinc–Plated Steel	871A-BRN22
		Stainless Steel	871A-BRS22
30 (01.18)		Zinc–Plated Steel	871A-BRN30
		Stainless Steel	871A-BRS30
For use with the 871A-BXN30 or 871A-BXS30 Spring Return Brackets.		Zinc–Plated Steel	871A-BRN47
		Stainless Steel	871A-BRS47

Stainless Steel Mounting Hardwareand Chemical Resistant Materialfor Harsh Environment

	Sensor Diameter—mm	Dimensions—mm (inches)			
		C	D	G	Cat. No.
	4	—	—	4 (0.16)	871A-BP4
	5	—	—	5 (0.20)	871A-BP5
	6.5	—	—	6.5 (0.26)	871A-BP7
	8	8.0 (0.31)	18.3 (0.72)	—	871A-BP8
	12	12.0 (0.47)			871A-BP12
	18	18.0 (0.71)	29.4 (1.16)	—	871A-BP18
	30	30.0 (1.18)	48.4 (1.91)	—	871A-BP30
	34	34.0 (1.34)	48.3 (1.90)	—	871A-BP34

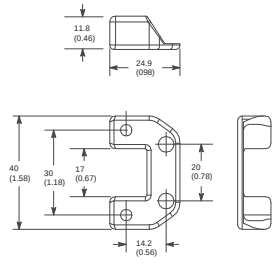
Snap-Clamp Brackets

Barrel Diameter [mm]	Material	Cat. No.
12	Glass-filled nylon	871A-SCBP12
18		871A-SCBP18

Mounting Bracket for VersaCube, Proximity Sensors

Kit includes:

- (1) Threaded mounting bracket
- (1) Through-hole mounting bracket
- (2) 10–32 x 1 mounting screw
- (2) 10–32 x 1 mounting screw
- (1) Ground terminal lug
- (1) Green color-coded binding screw

Description	Dimensions—mm (in)	Cat. No.
The mounting kit for VersaCube sensors provides additional mounting flexibility to 871P VersaCube style sensors. This kit includes an accessory mounting bracket that allows the VersaCube to bolt in place of existing 871P rectangular and similar competitive sensors. Appropriately sized mounting screws are also supplied. Additionally a ground lug terminal and green color-coded binding screw are provided for grounding the VersaCube sensor in the event that the unit is not mounted to a grounded metal frame.		871A-PKIT

SENSORS

Capacitive Proximity Sensors (875C, 875CP)

Bulletin	875C
Type	Capacitive Proximity Sensors General Purpose
Features	• Nickel-Plated Brass Barrel • Adjustable Sensing Distance • Plastic Barrel
Barrel Size	Diameter M18, M30
Standard Sensing Range	1 mm…10 mm, 2 mm…20 mm
Output Mode	PNP Normally Open Shielded 3-wire DC, 2-wire AC
Connection	Cable Micro / M12 Connector
Supply Voltage	10…48V DC
Enclosure Rating	
IP	IP 67
NEMA	NEMA 1,2,3,4,6,13
Approvals	CE
Product Selection	**See this page**
Accessories	**See page 6-29**

875C Capacitive Proximity Sensors General Purpose

3-Wire DC

- Metal, nonmetal solid and liquid sensing capability
- Adjustable sensing distance for 18 mm and 30 mm models
- 3-wire operation
- 3-conductor, 3-pin or 4-pin connection
- Normally open or normally closed output
- Short circuit, overload, reverse polarity, and transient noise protection
- CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Sensing Range [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)	Cat. No.
Micro QD style	M30 Treaded	2…10 (0.08…0.39)	Yes	N.O.	PNP	100	875C-M10NP30-D4
Pico QD style	M18 Treaded	1…5 (0.04…0.20)	Yes	N.O.	PNP	100	875C-M5NP18-P3
Micro QD Style	M30 Treaded	5…20 (0.20…0.79)	No	N.O.	PNP	100	875CP-N20NP30-D4
Pico QD Style	M18 Treaded	2…8 (0.08…0.31)	No	N.O.	PNP	100	875CP-N8NP18-P3
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft)), Micro QD / M12 Style							**889D-F4AC-2**
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft)), Pico QD / M8 Style							889P-F3AB-2

Ultrasonic Sensors (873E, 873P)

Bulletin	**873P**	
Type	Ultrasonic Sensors Analog or Discrete Output	Ultrasonic Sensors Programmable
Features	• Adjustable sensing distance (discrete model) • Analog and discrete output types	• Programmable for window setup • Analog and discrete output types
Barrel Size	Cylindrical M18, M30	Cylindrical M30
Programmable	—	—
Sensitivity Adjustment	Manual	Manual
Response Time	25 ms	—
Sensing Range		
Reflection	100…2500 mm	150…1500 mm, 350…3500 mm
Opposed	—	—
Output Mode	PNP Analog 4…20 mA Analog 0…10V DC Normally Open	PNP Analog 4…20 mA Analog 0…10V DC Normally Open
Connection	Micro / M12 Connector Micro / M12 Pigtail	Micro / M12 Connector
Supply Voltage	10…30V DC	10…30V DC
Enclosure Rating		
IP	IP 67	IP 67
NEMA	—	—
Special enclosure	—	—
Approvals	UL, CE	CE
Product Selection	**See page 6-34**	**See page 6-34**
Accessories	**See page 6-29**	**See page 6-29**

Ultrasonic Sensors Analog or Discrete Output

- Sensing Ranges: 100…2500 mm
- Analog output models (4…20 mA, 0…10V DC)
- Discrete output models (normally open, PNP)
- Plastic barrel housing
- Adjustable sensing distance (discrete models)
- Hold/Synchronize function to reduce crosstalk
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- cULus listed and CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Sensing Range [mm (in.)]	Output Configuration	Output Type	Switching Frequency (Hz)		Cat. No.
Micro QD Pigtail	M18	100…600 (3.94…23.62)	N.O.	PNP	20	★	873P-DBNP1-F4
Micro QD Pigtail	M18	200…1500 (7.87…59.06)	N.O.	PNP	10	★	873P-DBNP2-F4
Micro QD / M12	M30	300…2500 (11.81…98.43)	N.O.	PNP	5	★	873P-DCNP1-D5
Micro QD / M12	M18	100…600 (3.94…23.62)	—	4…20 mA	—	★	873P-DBAC1-D4

Ultrasonic Sensors Programmable

- Sensing ranges: 150…3500mm
- Programmable models include 2 discrete and 1 analog output
- Discrete outputs can be programmed for normally-open or normally-closed operation
- Programmable set point adjustment via pushbutton
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- cULus listed and CE marked for all applicable directives

Connection Type	Barrel Diameter [mm]	Sensing Range [mm (in.)]	Output Configuration	Switching Frequency (Hz)		Cat. No.
Micro QD / M12	M30	150…1500 (5.91…59.10)	2 PNP with 4…20 mA	1	★	873P-DCAC1S-D5
Micro QD / M12	M30	350…3500 (13.78…137.80)	2 PNP with 4…20 mA	1	★	873P-DCAC2S-D5

★ DC Micro QD / M12 Cordset Cat. No. 889D-F5AC-2, see page 4-36

Condition Sensing Switches

Bulletin	**836E**	**837E**	**839E**
Type	Solid-State Pressure Switches	Solid-State Temperature Switches	Solid-State Flow Switches
Features	• Microprocessor based with no moving parts for longer life and reduced downtime • Rugged, corrosion-resistant 316L stainless steel housing features an IP66 enclosure rating to withstand harsh industrial conditions • Operating pressures from -15…6,000 psi (gauge) • Industry-leading four-digit 14-segment digital display • Independently programmable dual PNP N.O./N.C. outputs or 4…20 mA analog output • Stainless steel sensing element	• Microprocessor based with no moving parts for longer life and reduced downtime • Rugged, corrosion-resistant 316L stainless steel housing features an IP66 enclosure rating to withstand harsh industrial conditions • Media temperature range from -50…150°C (-58…302°F) • Industry-leading four-digit 14-segment digital display • Independently programmable dual PNP N.O./N.C. outputs or 4…20 mA analog output • 316L Stainless steel probe	• Microprocessor based with no moving parts for longer life and reduced downtime • Rugged, corrosion-resistant 316 stainless steel housing features an IP66 enclosure rating to withstand harsh industrial conditions • Flow range from 0.03…3 m/s (0.1…9.84 ft/s) • Industry-leading four-digit 14-segment digital display • Independently programmable dual PNP N.O./N.C. outputs or 4…20 mA analog output • 316L Stainless steel probe
Remote Control and Diagnostic	Yes, via USB-port		
Sensitivity Adjustment	Programmable		
Response Time	>20 ms for switch		
Operating Range	- 1 to 413 bar -15 to 6.000 psi	-50 °C to 150 °C -58 ° to 302 °F	0.03 to 3 m/s 0.1 to 9.84 ft/s
Output Mode	Dual PNP Analog 4…20mA NO/NC selectable		
Connection	Micro / M12 Connector		
Process Connection	1/4in NPT (female) SAE7/16-20UNF (female)		
Supply Voltage	10…30V DC		
Enclosure Rating			
IP	IP66		
Approvals	c-UL, CE		
Product Selection	**See page 6-36**	**See page 6-38**	**See page 6-40**

Solid-State Pressure Switches

Dual PNP Output or 4…20 mA Analog with Single PNP Output

- Media temperature range from -40…100°C (-40…212°F)
- Operating temperatures from -40…85°C (-40…185°F)
- Industry-leading four-digit 14-segment digital display
- Independently programmable dual PNP N.O./N.C. outputs or 4…20 mA analog outputs
- Accuracy is <0.5% of upper pressure range limit
- Repeatability is <0.2% of upper pressure range limit
- IP66 enclosure rating
- 316L stainless steel; fluorinated elastomer seals

Dual PNP Output

Process Connection	Pressure Range (psig)	Set Point Range (psig)	Reset Point Range (psig)	Maximum Working Pressure (psig)★	Cat. No.
1/4 inch NPT (female)	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DA1CC1D4
	0…60	0.30…60	0…59.70	160.5	836E-DA1EL1D4
	0…150	0.75…150	0…149.25	400.5	836E-DA1EN1D4
	0…600	3.00…600	0…597.00	1600.5	836E-DA1EQ1D4
	0…1,500	7.50…1,500	0…1,492.50	1600.5	836E-DA1ER1D4
	0…400 (bar)	2.07…413.79 (bar)	0…400 (bar)	400 (bar)	836E-DA1EU1D4
SAE 7/16-20 UNF (female)	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DA1CC2D4
	0…60	0.30…60	0…59.70	160.5	836E-DA1EL2D4
	0…150	0.75…150	0…149.25	400.5	836E-DA1EN2D4
	0…600	3.00…600	0…597.00	1600.5	836E-DA1EQ2D4
	0…1,500	7.50…1,500	0…1,492.50	1600.5	836E-DA1ER2D4
	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DA1EU2D4
G1/4 BSPP (female)	-1…1 (bar)	-1.0…+1.03 (bar)	-1.03…1 (bar)	2.7 (bar)	836E-DA1CC3D4
	0…4 (bar)	0.02…4.14 (bar)	0…4 (bar)	10.7 (bar)	836E-DA1EL3D4
	0…10 (bar)	0.05…10.30 (bar)	0…10 (bar)	26.7 (bar)	836E-DA1EN3D4
	0…40 (bar)	0.21…41.38 (bar)	0…40 (bar)	106.7 (bar)	836E-DA1EQ3D4
	0…100 (bar)	0.52…103.45 (bar)	0…100 (bar)	106.7 (bar)	836E-DA1ER3D4
	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DA1EU3D4
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (straight) ‡					**889D-F4AC-2**
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (right angle) ‡					**889D-R4AC-2**

★ Maximum working pressure (MWP) is the maximum pressure a switch can tolerate for an indefinite period of time. Over pressure limit is the maximum pressure a switch can tolerate for a short period of time without sustaining permanent damage. Burst pressure limit is the maximum pressure a switch can tolerate without sustaining permanent damage or leakage.

‡ Other cable lengths are available. Shielded cables may be required for some analog output applications. Refer to the *On-Maschine Connectivity* catalog for additional information.

Solid-State Pressure Switches, Continued

4…20 mA Analog with Single PNP Output

Process Connection	Pressure Range (psig)	Set Point Range (psig)	Reset Point Range (psig)	Maximum Working Pressure (psig)★	Cat. No. ‡
1/4 inch NPT (female)	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DC1CC1D4
	0…60	0.30…60	0…59.70	160.5	836E-DC1EL1D4
	0…150	0.75…150	0…149.25	400.5	836E-DC1EN1D4
	0…600	3.00…600	0…597.00	1600.5	836E-DC1EQ1D4
	0…6,000	30…6000	0…5,970.00	6000	836E-DC1ER1D4
	0…6,000	0.30…6000	0…5,970.00	6,000	836E-DC1EU1D4
SAE 7/16-20 UNF (female)	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DC1CC2D4
	0…60	0.30…60	0…59.70	160.5	836E-DC1EL2D4
	0…150	0.75…150	0…149.25	400.5	836E-DC1EN2D4
	0…600	3.00…600	0…597.00	1600.5	836E-DC1EQ2D4
	0…400 (bar)	2.07…413.79 (bar)	0…400 (bar)	400 (bar)	836E-DC1ER2D4
	0…6,000	0.30…6000	0…5,970.00	6,000	836E-DC1EU2D4
G1/4 BSPP (female)	-15…15	-14.92…+15	-15.00…14.92	40.5	836E-DC1CC3D4
	0…60	0.30…60	0…59.70	160.5	836E-DC1EL3D4
	0…150	0.75…150	0…149.25	400.5	836E-DC1EN3D4
	0…600	3.00…600	0…597.00	600	836E-DC1EQ3D4
	0…100 (bar)	0.52…103.45 (bar)	0…100 (bar)	106.7 (bar)	836E-DC1ER3D4
	0…400 (bar)	2.07…413.79 (bar)	0…400 (bar)	400 (bar)	836E-DC1EU3D4
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (straight) §					**889D-F4AC-2**
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (right angle) §					**889D-R4AC-2**

★ Maximum working pressure (MWP) is the maximum pressure a switch can tolerate for an indefinite period of time. Over pressure limit is the maximum pressure a switch can tolerate for a short period of time without sustaining permanent damage. Burst pressure limit is the maximum pressure a switch can tolerate without sustaining permanent damage or leakage.

‡ Analog output version may be set up to output dual PNP N.O./N.C.

§ Other cable lengths are available. Shielded cables may be required for some analog output applications. Refer to the *On-Maschine Connectivity* catalog for additional information.

Accessories

Description	Cat. No.
1/4 inch NPT (Female) Adaptor	836E-NP71
7/16-20 UNF (Female) Adaptor	836E-NP72
G1/4 BSPP (Female) Adaptor	836E-NP73
1/4 inch NPT (Male) Adaptor	836E-NP74
7/16-20 UNF (Male) Adaptor	836E-NP75
G1/4 BSPP (Male) Adaptor	836E-NP76
Configuration Kit (includes converter cable and ReadWin 2000 software)	836E-NSR

Solid-State Temperature Switches

Dual PNP Output or 4…20 mA Analog with Single PNP Output

- Media temperature range from -50…150°C (-58…302°F)
- Operating temperatures from -40…85°C (-40…185°F)
- Industry-leading four-digit 14-segment digital display
- Independently programmable dual PNP NO/NC outputs or 4…20 mA analog outputs
- Stainless steel probe
- 316L stainless steel construction
- IP66 enclosure rating

Dual PNP Output

Process Connection‡	Set Point Range (psig) °C (°F)	Reset Point Range (psig) °C (°F)	Probe Length	Cat. No.
1/4 inch NPT (Male)	-49…150° (-57…302°)	-50…149.5° (-58…301°)	50 mm (1.96 in.)	837E-DA1BN1A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	100 mm (3.93 in.)	837E-DA1BN1A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	200 mm (7.87 in.)	837E-DA1BN1A4D4
1/2 inch NPT (Male)	-49…150° (-56.2…302°)	-50…149.5° (-58…301.1°)	50 mm (1.96 in.)	837E-DA1BN2A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	100 mm (3.93 in.)	837E-DA1BN2A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	200 mm (7.87 in.)	837E-DA1BN2A4D4
G1/4 BSPP	-49…150° (-57…302°)	-50…149.5° (-58…301°)	50 mm (1.96 in.)	837E-DA1BN3A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	100 mm (3.93 in.)	837E-DA1BN3A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	200 mm (7.87 in.)	837E-DA1BN3A4D4
G1/2 BSPP	-49…150° (-57…302°)	-50…149.5° (-58…301°)	50 mm (1.96 in.)	837E-DA1BN4A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	100 mm (3.93 in.)	837E-DA1BN4A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301°)	200 mm (7.87 in.)	837E-DA1BN4A4D4
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (straight) ★				**889D-F4AC-2**
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (right angle) ★				**889D-R4AC-2**

★ Other cable lengths are available. Shielded cables may be required for some analog output applications. Refer to the *On-Maschine Connectivity* catalog for additional information.

Solid-State Temperature Switches, Continued

4…20 mA Analog with Single PNP Output

Process Connection‡	Set Point Range (psig) °C (°F)	Reset Point Range (psig) °C (°F)	Probe Length	Cat. No. ‡
1/4 inch NPT (Male)	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	50 mm (1.96 in.)	837E-DC1BN1A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	100 mm (3.93 in.)	837E-DC1BN1A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	200 mm (7.87 in.)	837E-DC1BN1A4D4
1/2 inch NPT (Male)	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	50 mm (1.96 in.)	837E-DC1BN2A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	100 mm (3.93 in.)	837E-DC1BN2A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	200 mm (7.87 in.)	837E-DC1BN2A4D4
G1/4 BSPP	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	50 mm (1.96 in.)	837E-DC1BN3A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	100 mm (3.93 in.)	837E-DC1BN3A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	200 mm (7.87 in.)	837E-DC1BN3A4D4
G1/2 BSPP	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	50 mm (1.96 in.)	837E-DC1BN4A1D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	100 mm (3.93 in.)	837E-DC1BN4A2D4
	-49…150° (-57…302°)	-50…149.5° (-58…301.1°)	200 mm (7.87 in.)	837E-DC1BN4A4D4
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (straight) §				**889D-F4AC-2**
Recommended Cordset: 2 m (6.5 ft) 4-pin DC Micro QD / M12 (right angle) §				**889D-R4AC-2**

‡ Analog output version may be set up to output dual PNP N.O./N.C.

§ Other cable lengths are available. Shielded cables may be required for some analog output applications. Refer to the *On-Maschine Connectivity* catalog for additional information.

Accessories

Description	Cat. No.
Configuration Kit (includes converter cable and ReadWin 2000 software)	836E-NSR

Solid-State Flow Switches

Dual PNP Output or 4…20 mA Analog with Single PNP Output

- Microprocessor based with no moving parts for longer life and reduced downtime
- Rugged, corrosion resistant 316 stainless steel housing features an IP66 enclosure rating to withstand harsh industrial conditions
- Flow rates of liquid media (calorimetric measuring principle) in the range from 0.03…3 m/s (0.1…9.84 ft/s)
- Industry leading four-digit 14-segment digital display
- Dual NO/NC programmable PNP outputs or 4…20 mA analog output with single PNP output
- Stainless steel probe

Process Connection	Measuring Range	Response Time	Probe Length	Cat. No.	
				Dual PNP Output	4…20 mA Analog Output with Single PNP Output★
1/4 inch NPT (Male)	Liquids from 0.03…3 m/s (0.1… 9.84 ft/s) Mass flow as a relative value between 0 and 100%	6…12 seconds	30 mm (1.18 in.)	839E-DA1BA1A3-D4	839E-DC1BA1A3D4
			100 mm (3.93 in.)	839E-DA1BA1A2-D4	839E-DC1BA1A2D4
1/2 inch NPT (Male)			30 mm (1.18 in.)	839E-DA1BA2A3D4	839E-DC1BA2A3D4
			100 mm (3.96 in.)	839E-DA1BA2A2D4	839E-DC1BA2A2D4
G1/4 BSPP			30 mm (1.18 in.)	839E-DA1BA3A3D4	839E-DC1BA3A3D4
			100 mm (3.96 in.)	839E-DA1BA3A2D4	839E-DC1BA3A2D4
G1/2 BSPP			30 mm (1.18 in.)	839E-DA1BA4A3D4	839E-DC1BA4A3D4
			100 mm (3.96 in.)	839E-DA1BA4A2D4	839E-DC1BA4A2D4
Sanitary Connection					
Sanitary Connection - 1…1.5 inch Clamp	Liquids from 0.03…3 m/s (0.1… 9.84 ft/s) Mass flow as a relative value between 0 and 100%	6…12 seconds	30 mm (1.18 in.)	839E-DA1BABA3D4	839E-DC1BABA3D4
			100 mm (3.96 in.)	839E-DA1BABA2D4	839E-DC1BABA2D4
Sanitary Connection - 2 inch Clamp			30 mm (1.18 in.)	839E-DA1BACA3D4	839E-DC1BACA3D4
			100 mm (3.96 in.)	839E-DA1BACA2D4	839E-DC1BACA2D4
Sanitary Connection - Base Switch			30 mm (1.18 in.)	839E-DA1BA7A3D4	839E-DC1BA7A3D4
			100 mm (3.96 in.)	839E-DA1BA7A2D4	839E-DC1BA7A2D4
Recommended cordset: 2 m (6.5 ft) 4-pin DC micro (straight)					**889D-F4AC-2**
Recommended cordset: 2 m (6.5 ft) 4-pin DC micro (right angle)					**889D-R4AC-2**

★ Analog output version may be set up to output dual PNP N.O./N.C.

Accessories

Description	Cat. No.
Configuration Kit (includes converter cable and ReadWin 2000 software)	836E-NSR
1…1.5 inch Sanitary Clamp	836E-NH7B
2 inch Sanitary Clamp	836E-NH7C
Weld Boss Sealing Taper	837E-NWT
Weld Boss Collar Weld	837E-NWS
Weld Boss Coupling with Sealing Taper	837E-NWR

Bulletin Index

Bulletin Number	Page
100-C	1-31
100-CR	1-31
100-D	1-39
100-G	1-44
100-K	1-28
100-KR	1-28
100S-C	1-32
100S-D	1-40
103C/107C	1-50
103T/107T	1-48
109-C/105-C	1-51
140A	1-5
140-CMN	1-8
140F	2-46
140M-C/-D/-F	1-8
140M-I/-J/-L	1-10
140M-H/-J/-L/-N	1-12
140M-RC	1-9
140UE	1-18
141A	1-53
1485	4-16
1489	2-43
1492	4-13
1492-FB	2-45
1492-J	4-5
1492-L	4-8
1492-PDE	4-12
1492-RCD	2-37
1492-SP	2-38
150-C	1-78
150-F	1-80
156-B	1-46
1585	4-28
1606-XL	2-53
1609-U/-P/-S	2-56
1732	4-33
1752	5-28
1763	2-30
1766	2-31
1783	4-31
190E/191E	1-48
190S/191S	1-49
193-EC1/2/3/5	1-70
193-ED/-EE	1-66
193-K	1-63
193-T1	1-64
194E	1-110
194E-Y	1-112
194L	1-104
20A	1-94
20B	1-96
20F	1-98
2080	2-27
22A	1-84
22B	1-88
22C	1-92
22D	1-90
22F	1-86
2711C	3-47
280	4-14
280A/281A	1-76
280D/281D	1-76
283A/283D	1-76
284A/284D	1-76
42BT	6-13
42CA	6-10
42CM	6-11
42CS	6-12
42EF	6-7
42G	6-14
42JS	6-9
44B	6-13
45BPD	6-15
45CLR	6-16
45CPD	6-16
45DLA	6-19
45MLA	6-18
45PVA	6-17
45AST	6-17
440E	5-9
440F	5-20
440G	5-7
440J	5-10
440K	5-6
440L	5-14
440N-S	5-5
440N-Z	5-3
440P	5-11
440R	5-22
442L	5-20
445L	5-16
4983-D	2-47
700-CF/-CRF	2-19
700-FE	2-13
700-FS	2-14
700-HA	2-6
700-HC	2-8
700-HK	2-9
700-HL	2-10
700-HP	2-12
700-K	2-17
700-KR	2-17
700-SH	2-22
800B	3-7
800F	3-10
800FC	3-31
800FD	3-14
800FP	3-21
809S	1-75
813S	1-75
814S	1-75
817S	1-75
825-P	1-73
836E	6-36
837E	6-38
839E	6-40
855B	3-41
855BL	3-42
855BM	3-42
855BS	3-42
855E/-D	3-4
855F	3-39
855H	3-40
855P	3-33
855PB	3-33
855PC	3-33
855PD	3-34
855PS	3-34
855T	3-35
855W	3-43
871A	4-42
871TM	6-27
871TS	6-28
871P	6-29
872C	6-25
873P	6-34
875C	6-32
889D	4-36
889N	4-39
889P	4-40
889R	4-38
898D/898P	4-41
900-TC	2-23

Rockwell Automation offers a breadth of quality Allen-Bradley® components to fit your specific needs. In order to assist you with your component selection, we offer a variety of configuration and selection tools.

Local Distributor
Call your local in-country representative
http://www.rockwellautomation.com/distributor/

On-Line Product Directory
Our extensive product portfolio is designed to improve your processes through every stage of your manufacturing cycle.
http://www.rockwellautomation.com/products/

Product Selection Toolbox
Our powerful range of product selection and system configuration tools assist you in choosing and applying our products.
http://www.rockwellautomation.com/en/e-tools/

Catalogues
Within our catalogues you'll find an extensive selection of essential Allen-Bradley component products.
http://www.ab.com/catalogs/

Preferred availability products are identified in the catalogue with **bold** catalogue numbers and options. Products so identified are the most commonly ordered and are typically in factory stock.

Allen-Bradley, ArmorBlock, ArmorStart, ArmorConnect, CompactBlock, Control Tower, DataSite, DeviceLogix, GuardShield, InView, LifeLine, MachineAlert, MatGuard, MicroLogix, Minotaur, PanelView, PowerFlex, PowerMonitor, PICO, Rockwell Software, SafeZone, SensaGuard, and SMC are trademarks of Rockwell Automation.

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters
Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication EC-GL-CA007A-EN-P - November 2011
Supersedes Publication EC-GL-CA006B-EN-P - June 2010

Copyright ©2012 Rockwell Automation, Inc. All Rights Reserved. Printed in EMEA.